NEC

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NEC Express5800/120Li
User's Guide

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Keep this manual at hand for quick reference at anytime necessary.

SAFETY INDICATIONS

Follow the instructions in this manual for your safety to use the NEC Express server.

Your server contains components with possible danger, hazards that may cause by ignoring warnings, and preventive actions against such hazards.

Server components with possible danger are indicated with a warning label placed on or around them as well as described in this manual.

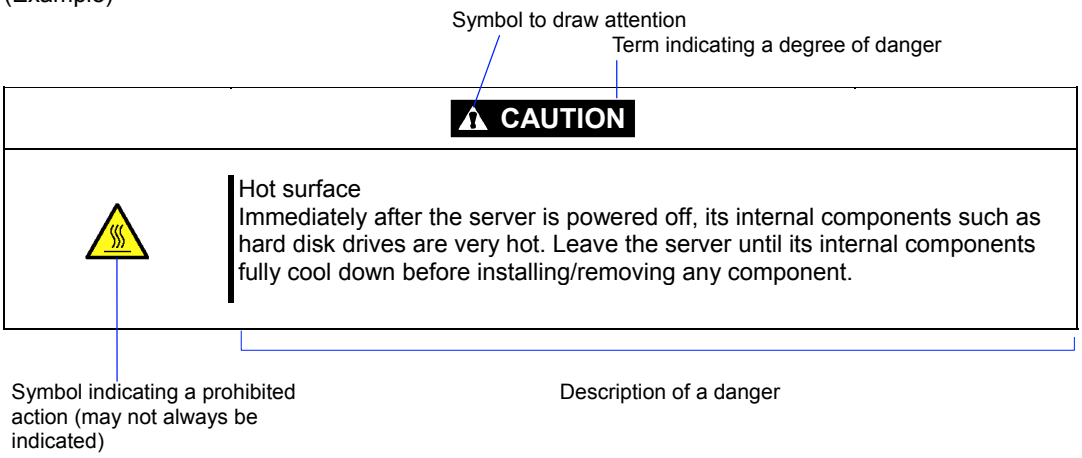
In this manual or warning labels, "WARNING" or "CAUTION" is used to indicate a degree of danger. These terms are defined as follows:

WARNING	Indicates the presence of a hazard that may result in death or serious personal injury if the instruction is ignored.
CAUTION	Indicates the presence of a hazard that may cause minor personal injury, including burns, or property damage if the instruction is ignored.

Precautions and notices against hazards are presented with one of the following three symbols. The individual symbols are defined as follows:

	This symbol indicates the presence of a hazard if the instruction is ignored. An image in the symbol illustrates the hazard type. (Attention)
	This symbol indicates prohibited actions. An image in the symbol illustrates a particular prohibited action. (Prohibited Action)
	This symbol indicates mandatory actions. An image in the symbol illustrates a mandatory action to avoid a particular hazard. (Mandatory Action)

(Example)


Symbol to draw attention
Term indicating a degree of danger
CAUTION
Hot surface
Immediately after the server is powered off, its internal components such as hard disk drives are very hot. Leave the server until its internal components fully cool down before installing/removing any component.
Symbol indicating a prohibited action (may not always be indicated)
Description of a danger

SYMBOLS USED IN THIS MANUAL AND WARNING LABELS

Attentions

	Indicates that improper use may cause an electric shock.
	Indicates that improper use may cause personal injury.
	Indicates that improper use may cause fingers to be caught.
	Indicates that improper use may cause fumes or fire.
	Indicates a general notice or warning that cannot be specifically identified.
	Indicates that improper use may cause loss of eyesight due to laser beam.

Prohibited Actions

	Indicates a general prohibited action that cannot be specifically identified.
	Do not disassemble, repair, or modify the server. Otherwise, an electric shock or fire may be caused.

Mandatory Action

	Unplug the power cord of the server. Otherwise, an electric shock or fire may be caused.
	Indicates a mandatory action that cannot be specifically identified. Make sure to follow the instruction.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE Statement

Warning: This is a Class A product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures (EN55022).

BSMI Statement

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Momentary voltage drop prevention:

This product may be affected by a momentary voltage drop caused by lightning. To prevent a momentary voltage drop, an AC uninterruptible power supply (UPS) unit should be used.

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PREFACE

Congratulations on the purchase of your NEC Express server.

Purchase of this server is your assurance of receiving state-of-the-art, high quality hardware to meet your needs, both now and in the future.

Read this User's Guide thoroughly to fully understand handling of the NEC Express server and appreciate its functions to the maximum extent.

ABOUT THIS USER'S GUIDE

This manual is a guide for proper setup and use of your server.
This manual also covers useful procedures for dealing with difficulties and problems that may arise during setup or operation of your server.
Keep this manual for future use.
The following describes how to proceed with this manual.

How to Use This Manual

To aid you in finding information quickly, this manual contains the following information:

Chapter 1 Notes on Using Your Server
includes information that needs attention to use the server. Make sure to read this chapter before setting up and using the server. It also includes requirements and advisory information for transfer and disposal of the server.

Chapter 2 General Description
includes information necessary to use the server, such as names and functions of its components.

Chapter 3 Setting Up Your Server
tells you how to select a site, unpack the system, make cable connections, and power on your system.

Chapter 4 Configuring Your Server
tells you how to configure the system and provides instructions for running the BIOS SETUP Utility and the RAID configuration utility, which is used to configure RAID drives in your system. This chapter also provides information on mother board jumper settings.

Chapter 5 Installing the Operating System with Express Setup
describes how to install the operating system.

Chapter 6 Installing and Using Utilities
describes how to install the utilities for the server. It also includes a description on using the attached "NEC EXPRESSBUILDER" CD-ROM.

Chapter 7 Maintenance
provides you with all the information necessary to maintain successful operation of the server. This chapter also includes a description on relocating and storing the server.

Chapter 8 Troubleshooting
contains helpful information for solving problems that might occur with your system.

Chapter 9 Upgrading Your Server
provides you with instructions for upgrading your system with an additional processor, optional memory, optional add-in cards, hard disk drives, peripheral devices, and power supply.

Chapter 10 Internal Cabling Diagram
includes cabling information for the one onboard SCSI controller, the IDE controller, the optional RAID controller, and the power supply.

Appendix A Specification
provides specifications for your server.

Appendix B Other Precautions
provides supplementary notes on using the server.

Appendix C IRQ and I/O Port Address
provides a list of factory-set IRQs and I/O port addresses assigned.

Appendix D Installing Windows Server 2003 x64 Editions
describes how to install Microsoft Windows Server 2003 x64 Editions without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2003 x64 Editions. See Chapter 5 for details.

Appendix E Installing Windows Server 2003
describes how to install Microsoft Windows Server 2003 without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2003. See Chapter 5 for details.

Appendix F Product Configuration Record Table
provides a table to be filled with your server configuration.

Text Conventions

The following conventions are used throughout this manual. For safety symbols, see "SAFETY INDICATIONS" provided earlier.

IMPORTANT:	Items that are mandatory or require attention when using the server
NOTE:	Helpful and convenient piece of information

IN THE PACKAGE

The carton contains various accessories, as well as the server itself. See the packing list or "Getting Started" guide to make sure that you have everything and that individual components are not damaged. If you find any component missing or damaged, contact your sales agent.

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Chapter 1

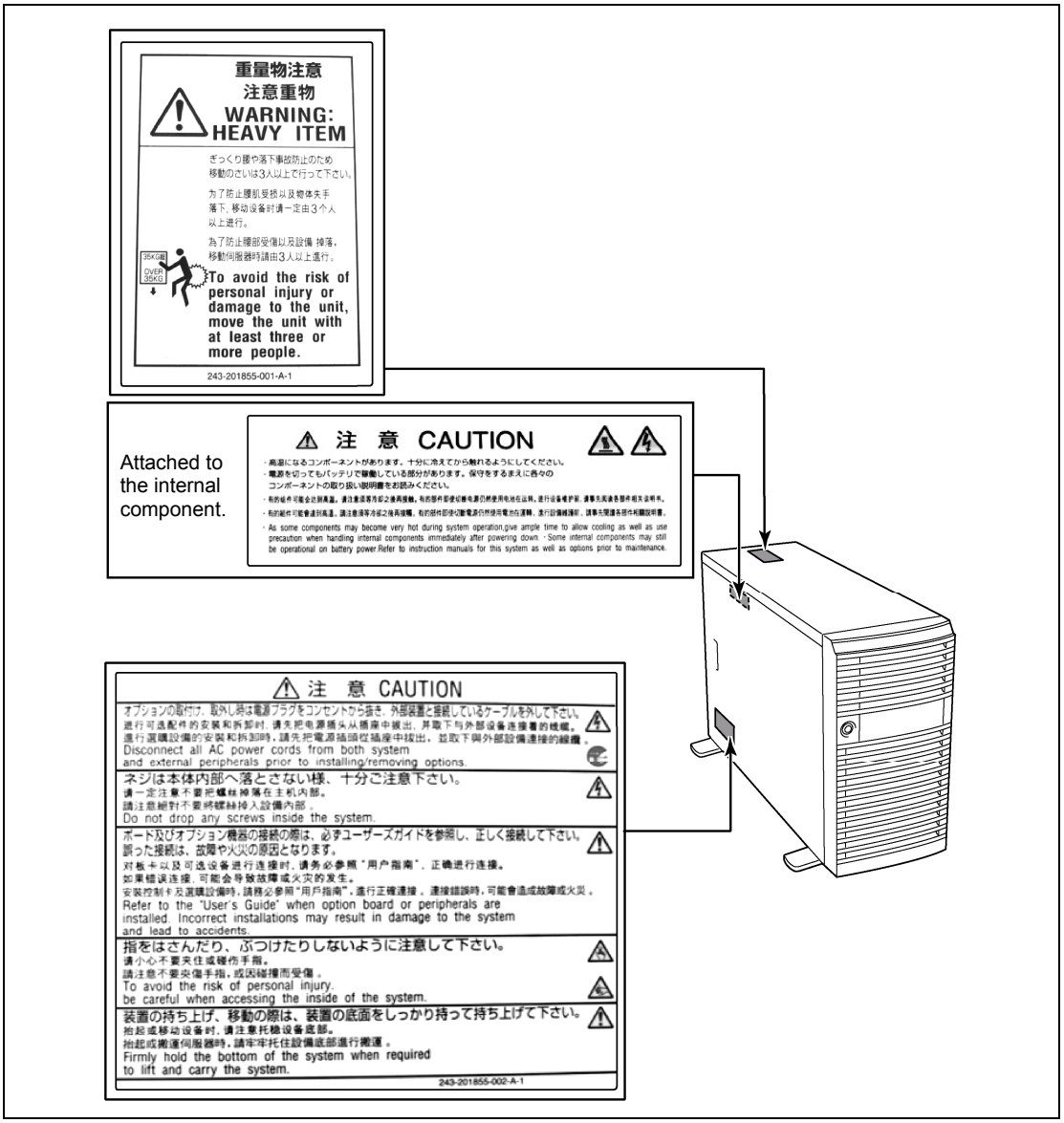
Notes on Using Your Server

This chapter includes information necessary for proper and safe operation of your server.

WARNING LABELS

The warning label is attached to components with possible danger or their vicinity in your server to inform the user that a hazardous situation may arise when operating the server. (Do not take off any label or soil it.)

If you find any label unattached, almost peeled off, or soiled, making the warning illegible, contact your sales agent.


重量物注意
注意重物
WARNING:
HEAVY ITEM
ぎっくり腰や落下事故防止のため
移動のさいは3人以上で行って下さい。
为了防止腰肌受损以及物体失手
落下，移动设备时请一定由３个人
以上进行。
為了防止腰部受傷以及設備 掉落，
移動伺服器時請由3人以上進行。
35KG超
OVER
35KG
To avoid the risk of personal injury or damage to the unit, move the unit with at least three or more people.
243-201855-001-A-1
Attached to the internal component.
注 意 CAUTION
・高温になるコンポーネントがあります。十分に冷えてから触れるようにしてください。
・電源を切ってもバッテリで稼働している部分があります。保守をするまえに各々の
コンポーネントの取り扱い説明書をお読みください。
・As some components may become very hot during system operation,give ample time to allow cooling as well as use precaution when handling internal components immediately after powering down . Some internal components may still be operational on battery power.Refer to instruction manuals for this system as well as options prior to maintenance.
注 意 CAUTION
オプションの取付け、取外し時は電源プラグをコンセントから抜き、外部装置と接続しているケーブルを外して下さい。
进行可选配件的安装和拆卸时，请先把电源插头从插座中拔出，并取下与外部设备连接着的线缆。
進行選購設備的安裝和拆卸時，請先把電源插頭從插座中拔出，並取下與外部設備連接的線纜。
Disconnect all AC power cords from both system and external peripherals prior to installing/removing options.
ネジは本体内部へ落とさない様、十分ご注意下さい。
请一定注意不要把螺丝掉落在主机内部。
請注意絕對不要將螺絲掉入設備內部。
Do not drop any screws inside the system.
ボード及びオプション機器の接続の際は、必ずユーザーズガイドを参照し、正しく接続して下さい。
誤った接続は、故障や火災の原因となります。
对板卡以及可选设备进行连接时，请务必参照"用户指南"，正确进行连接。
如果错误连接，可能会导致故障或火灾的发生。
安裝控制卡及選購設備時，請務必參閱"用戶指南"，進行正確連接 。連接錯誤時，可能會造成故障或火災。
Refer to the "User's Guide" when option board or peripherals are installed. Incorrect installations may result in damage to the system and lead to accidents.
指をはさんだり、ぶつけたりしないように注意して下さい。
请小心不要夹住或碰伤手指。
請注意不要夾傷手指，或因碰撞而受傷 。
To avoid the risk of personal injury, be careful when accessing the inside of the system.
装置の持ち上げ、移動の際は、装置の底面をしっかり持って持ち上げて下さい。
抬起或移动设备时，请注意托稳设备底部。
抬起或搬運伺服器時，請牢牢托住設備底部進行搬運 。
Firmly hold the bottom of the system when required to lift and carry the system.
243-201855-002-A-1

SAFETY NOTES

This section provides notes on using your server safely. Read this section carefully to ensure proper and safe use of the server. For symbols, see "SAFETY INDICATIONS" provided earlier.

General

⚠ WARNING

Do not use the server for services where critical high availability may directly affect human lives.

Your server is not intended to be used with or control facilities or devices concerning human lives, including medical devices, nuclear facilities and devices, aeronautics and space devices, transportation facilities and devices; and facilities and devices requiring high reliability. NEC assumes no liability for any accident resulting in personal injury, death, or property damage if the server has been used in the above conditions.

Do not use the server if any smoke, odor, or noise is present.

If smoke, odor, or noise is present, immediately turn off the power and disconnect the power plug from the outlet, then contact your sales agent. Using the server in such conditions may cause a fire.

Keep needles or metal objects away from the server.

Do not insert needles or metal objects into ventilation holes in the server or openings in the DVD-ROM drive. Doing so may cause an electric shock.

⚠ CAUTION

Keep water or foreign matter away from the server.

Do not let any form of liquid (water etc.) or foreign matter (e.g., pins or paper clips) enter the server. Failure to follow this warning may cause an electric shock, a fire, or a failure of the server. When such things accidentally enter the server, immediately turn off the power and disconnect the power plug from the outlet. Do not disassemble the server. Contact your sales agent.

Power Supply and Power Cord Use

⚠ WARNING

Do not hold the power plug with a wet hand.

Do not disconnect/connect the plug while your hands are wet. Failure to follow this warning may cause an electric shock.

⚠ CAUTION

Plug in to a proper power source.

Use a proper wall outlet. Use of an improper power source may cause a fire or a power leak.

Do not install the server where you need an extension cord. Use of a cord that does not meet the power specifications of your server may heat up the cord and cause a fire.

Do not connect the power cord to an outlet that has an illegal number of connections.

The electric current exceeding the rated flow overheats the outlet, which may cause a fire.

Insert the power plug into the outlet as far as it goes.

Heat generation resulting from a halfway inserted power plug (imperfect contact) may cause a fire. Heat will also be generated if condensation is formed on dusty blades of the halfway inserted plug, increasing the possibility of fire.

Use the authorized power cord only.

Use only the power cord that comes with your server. Use of an unauthorized power cord may cause a fire when the electric current exceeds the rated flow. Also, observe the following to prevent an electric shock or fire caused by a damaged cord.

- Do not stretch the cord harness.
- Do not pinch the power cord.
- Do not bend the power cord.
- Keep chemicals away from the power cord.
- Do not twist the power cord.
- Do not place any object on the power cord.
- Do not bundle power cords.
- Do not alter, modify, or repair the power cord.
- Do not secure the power cord with staples or equivalents.
- Do not use any damaged power cord. (Replace a damaged power cord with a new one of the same specifications. Ask your sales agent for replacement.)

Do not use the attached power cord for any other devices or usage.

The power cord that comes with your server is designed aiming to connect with this server and to use with the server, and its safety has been tested. Do not use the attached power cord for any other purpose. Doing so may cause a fire or an electric shock.

Installation, Relocation, Storage, and Connection

⚠ CAUTION

Never attempt to lift the server only by yourself.

Your server weighs max. 35 kg (depending on its hardware configuration). Carrying the server only by yourself may strain your back. Hold the server firmly by its bottom with at least three or more people. Do not hold the front door to lift the server. The front door may be disengaged from the server, causing personal injury.

Do not install the server in any place other than specified.

Do not install the server in the following places or any place other than specified in this manual. Failure to follow this instruction may cause a fire.

- a dusty place
- a humid place such as near a boiler
- a place exposed to direct sunlight
- an unstable place

Do not connect any interface cable with the power cord of the server plugged to a power source.

Make sure to power off the server and unplug the power cord from a power outlet before installing/removing any optional internal device or connecting/disconnecting any interface cable to/from the server. If the server is off-powered but its power cord is plugged to a power source, touching an internal device, cable, or connector may cause an electric shock or a fire resulted from a short circuit.

Do not use any unauthorized interface cable.

Use only interface cables provided by NEC and locate a proper device and connector before connecting a cable. Using an authorized cable or connecting a cable to an improper destination may cause a short circuit, resulting in a fire. Also, observe the following notes on using and connecting an interface cable.

- Do not use any damaged cable connector.
- Do not step on the cable.
- Do not place any object on the cable.
- Do not use the server with loose cable connections.

Cleaning and Working with Internal Devices

⚠ WARNING

Do not disassemble, repair, or alter the server.

Never attempt to disassemble, repair, or alter the server on any occasion other than described in this manual. Failure to follow this instruction may cause an electric shock or fire as well as malfunctions of the server.

Do not remove the lithium battery.

Your server contains the lithium battery. Do not remove the battery. Placing the lithium close to a fire or in the water may cause an explosion.

When the server does not operate appropriately due to the dead lithium battery, contact your sales agent. Do not disassemble the server to replace or recharge the battery by yourself.

Disconnect the power plug before accessing inside the server, or connecting the peripherals.

Make sure to power off the server and disconnect the power plug from a power outlet before cleaning or installing/removing internal optional devices. Touching any internal device of the server with its power cord connected to a power source may cause an electric shock even of the server is off-powered.

Disconnect the power plug from the outlet occasionally and clean the plug with a dry cloth. Heat will be generated if condensation is formed on a dusty plug, which may cause a fire.

⚠ CAUTION

Avoid installation in extreme temperature conditions.

Immediately after the server is powered off, its internal components such as hard disk drives are very hot. Leave the server until its internal components fully cool down before installing/removing any component.

Make sure to complete board installation.

Always install a board firmly. An incompletely installed board may cause a contact failure, resulting in smoking or fire.

Protect the unused connectors with the protective cap.

The unused power supply cable connectors are covered with the protective cap to prevent short circuits and electrical hazards. When removing the power supply cable connector from the internal devices, attach the protective cap to the connector. Failure to follow this warning may cause a fire or an electric shock.

During Operation

⚠ CAUTION

Stay away from the fan.

Keep your hand or hair away from the cooling fan on the rear of the server. Failure to follow this warning may get your hand or hair caught in the fan, resulting in injury.

Avoid contact with the server during thunderstorms.

Disconnect the power plug from the outlet when a thunderstorm is approaching. If it starts thundering before you disconnect the power plug, do not touch any part of the server including the cables. Failure to follow this warning may cause a fire or an electric shock.

Keep animals away from the server.

Failure to follow this warning may cause a fire or an electric shock.

Do not place any object on top of the server.

The server may fall and cause property damage to the surroundings.

Do not use a cellular phone or pager around the server.

Turn off the cellular phone or pager. Radio interference may cause malfunctions of the server.

FOR PROPER OPERATION

Observe the following notes for successful operation of the server. Use of the server ignoring the notes will cause malfunctions or failures of the server.

- Install the server in a place that meets requirements for successful operation. For details, see Chapter 3, "Setting Up Your Server."
- Do not delete the hard disk partition exclusively provided for maintenance of the server although it may appear on the OS.
- Make sure to power off the server before connecting or disconnecting cables between the server and peripheral devices.
- Verify that the access lamp on the server is unlit before turning off the server or ejecting the media.
- The server management logic on your system board monitors and logs system voltage changes. When plugging the power cord to the system, you may experience 10 seconds delay from the time you press the POWER switch on the front panel. This is normal system operation and is required by the server management logic.
- When you have just turned off the server, wait at least 30 seconds before turning it back on.
- Do not turn off the server until characters appear on the screen.
- For the disk which does not conform to the CD standard, the playback of such a disk with the CD drive is not guaranteed.
- Turn off the power and unplug the power cord from the outlet before relocating the server.
- Clean the server on a regular basis. (See Chapter 7 for cleaning.) Regular cleaning proactively prevents various failures of the server.
- Lightning may cause a momentary voltage drop. To prevent this problem, it is recommended to use of an uninterruptible power supply unit.
- Check and adjust the system clock before the operation if any of the following conditions is applicable.
  - After carriage of device
  - After storage of device
  - After the device is entered into the pause state under the environmental condition enduring device operation (temperature: 10°C - 35°C, humidity: 20% - 80%)
- Check the system clock at the rough rate of once per month. When the system clock is installed in a system requiring high time precision, it is recommended to use a time server (NTP server).
  If the system clock is remarkably delayed or advanced as the passage of time in spite of adjustment, contact your sales agent to ask maintenance.
- Store the unit under the storage condition (temperature: –10°C - 55°C, humidity: 20% - 80%, without condensation) to allow built-in devices and the unit to operate correctly in the next operation.
- Make sure to use optional devices supported by the server. Some non-supported devices may be physically installed/connected but cause failures of the server as well as malfunctions of the server.
- NEC recommends you use NEC's genuine products. Some third-party products claim that they support the server. However, repair of the server due to a failure or damage resulted from use of such third-party products will be charged.

TRANSFER TO THIRD PARTY

The following must be observed when you transfer (or sell) the server or software provided with the server to a third party:

Server hardware

Make sure to provide this manual along with the server to a third party.

> **IMPORTANT:** It is the user's responsibility to completely erase or modify all the data stored in storage device such as hard disk drive so that the data cannot be restored.

Provided software

To transfer or sell any software application that comes with the server to a third party, the following requirements must be satisfied:

- All provided software applications must be transferred and no backup copies must be retained.
- Transfer requirements listed in "Software License Agreement" that comes with each software application must be satisfied.
- Software applications that are not approved for transfer must be uninstalled before transferring the server.

DISPOSAL AND CONSUMABLES

- Dispose of the server, all the internal devices, floppy disks, and CD/DVD-ROMs according to all national laws and local ordinance.

IMPORTANT:

- For disposal (or replacement) of the battery on the mother board of the server, consult with your sales agent.
- It is the user's responsibility to completely erase or modify all the data stored in storage device such as hard disk drive so that the data cannot be restored.

- Your server contains some components that are only good for a limited period of time and require replacement, such as fans, internal batteries, the internal DVD-ROM drive, and the mouse. For stable operation of the server, NEC recommends you replace these components on a regular basis. Consult with your sales agent for replacement or the product lives.

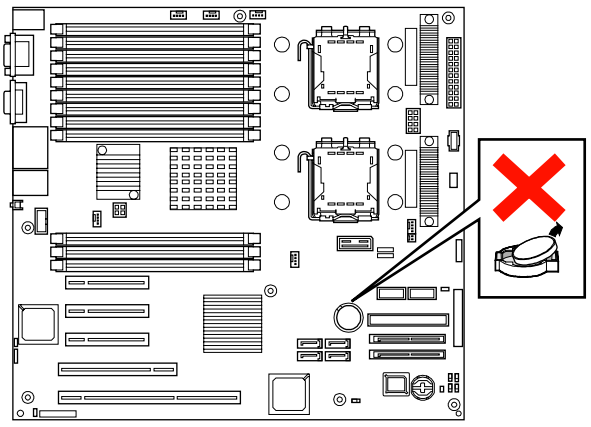
⚠ WARNING

Do not remove the lithium battery.

Your contains the lithium battery. Do not remove the battery. Placing the lithium or nickel cadmium battery close to a fire or in the water may cause an explosion.

When the server does not operate appropriately due to the dead lithium battery, contact your sales agent. Do not disassemble the server to replace or recharge the battery by yourself.

Refer to the manual that comes with the option board for the batteries on option board.



Mother board

USER SUPPORT

Before Asking for Repair, do the following when the server appears to fail:

1. Check if the power cord and the cables to other devices are properly connected.
2. See Chapter 8 to find if your problem fits the description. If it does, take the recommended measure for it.
3. Check if the software required for operation of the server is properly installed.

If the server still appears to fail after you have taken the above actions, consult with your sales agent immediately. Take notes on lamp indications of the server and alarm indications on the display unit before consultation, which may provide a significant help to your sale agent.

Advice for Health

The longer you keep using the computer equipment, the more you become tired, which may cause disorders of your body. When you use a computer, observe the following to keep yourself from getting tired:

Good Working Posture

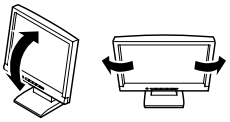
You have good posture if the following are satisfied when you use a computer:

- You sit on a chair with your back straight.
- Your hands are parallel with the floor when you put them on the keyboard.
- You look at the screen slightly lower than your eye height.

You have "good working posture" as described in the above when no part of your body is under excess strain, in other words when your muscles are most relaxed.

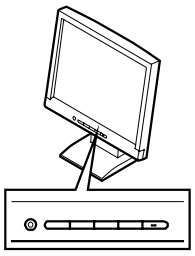
You have "bad posture" when you sit with your back hunched up or you operate a display unit with your face close to the screen. Bad working posture may cause eye strain or poor eyesight.

Adjustment of Display Unit Angles



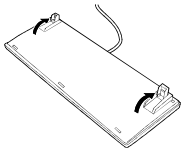
Most display units are designed for adjustment of the horizontal and vertical angles. This adjustment is important to prevent the screen from reflecting bright lights and to make the display contents easy to see. You will not be able to keep "good working posture" and you will feel more tired than you should if you operate a display unit without adjusting horizontal and vertical angles.

Adjustment of Screen Brightness and Contrast

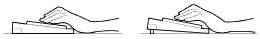


The display unit has brightness and contrast adjustment functions. The most suitable brightness and contrast depend on the individual and the working environment (well-lighted room or insufficient light). Adjust brightness and contrast so that the screen will be easy to see. An extremely bright or dark screen will give a bad effect to your eyes.

Adjustment of Keyboard Angle



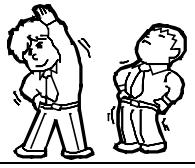
The keyboard provided with the server is designed for adjustment of an angle. Adjust the keyboard angle at which the keyboard is easy to operate. The adjustment assists in reducing strain on your shoulders, arms, and fingers.



Cleaning of Equipment

Clean equipment regularly. It is difficult to see the display contents on a dusty screen. Keeping equipment clean is also important for your sight.

Fatigue and Rest



If you feel tired, you should stop working and do light exercises.

Chapter 2

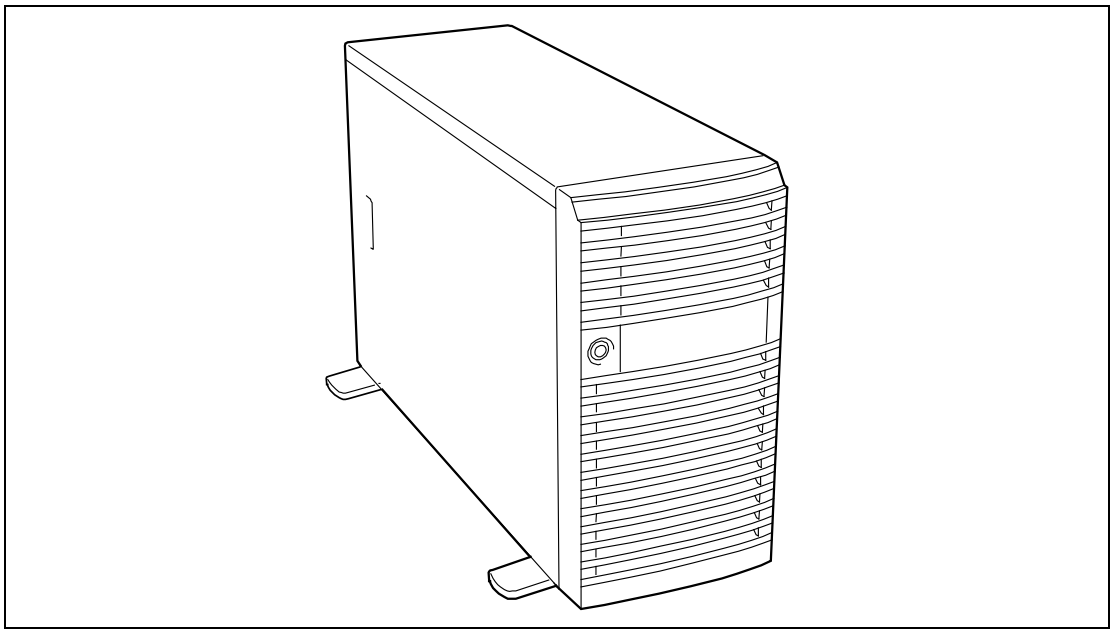
General Description

This chapter provides information that you should be familiar with before using the server. It includes names and functions of the components and features of the server.

OVERVIEW

Your server is a modular, multiprocessing server based on the Intel® Xeon™ microprocessor family. It is a solid performer and offers the latest technology. The combination of compute performance, memory capacity, and integrated I/O provides a high performance environment for many server market applications. These range from large corporations supporting remote offices to small companies looking to obtain basic connectivity capability such a file and print services, e-mail, web access, web site server, etc.

This server is conveniently housed and available as a tower-based system or as a rack-mount system (fits into a standard EIA 19-inch rack assembly).



Tower-based System Front View

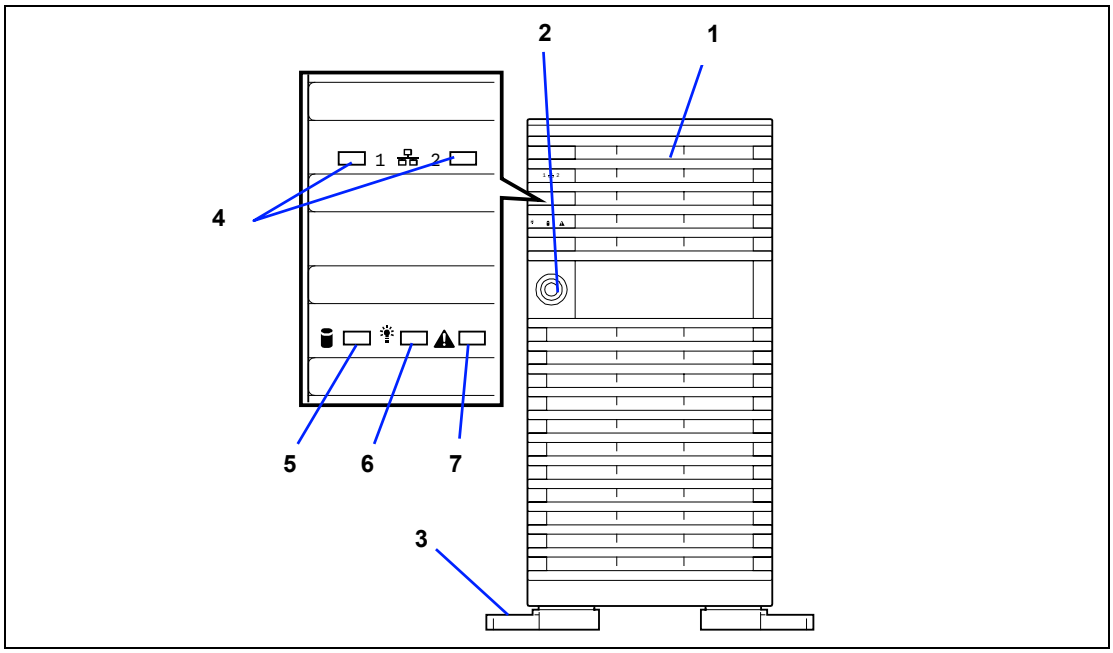
Your server may include hot-swap SAS hard disk drive bays. The hot-swap SAS hard disk drive bays hold up to six 1.0-inch SAS hard disk drives that can be swapped in or out of the system without powering it down, if RAID is configured in the system.

As application requirements increase, you can expand your server with an additional processor, additional memory, add-in boards and peripheral devices; tape devices, and hard disk drives.

SYSTEM CHASSIS

Names and functions of the components are shown below.

Front View



1 Front door
Open this door to access the POWER switch, 5.25-inch devices, or the DVD-ROM drive, to install/remove hard disk drives to 3.5-inch device bays, or connect the USB device. You can lock the front door using the provided security key.

2 Key lock
When locked, secures the front door not allowing access to the front system controls.

3 Stabilizers (4)
Use the stabilizers to prevent the server from falling down.

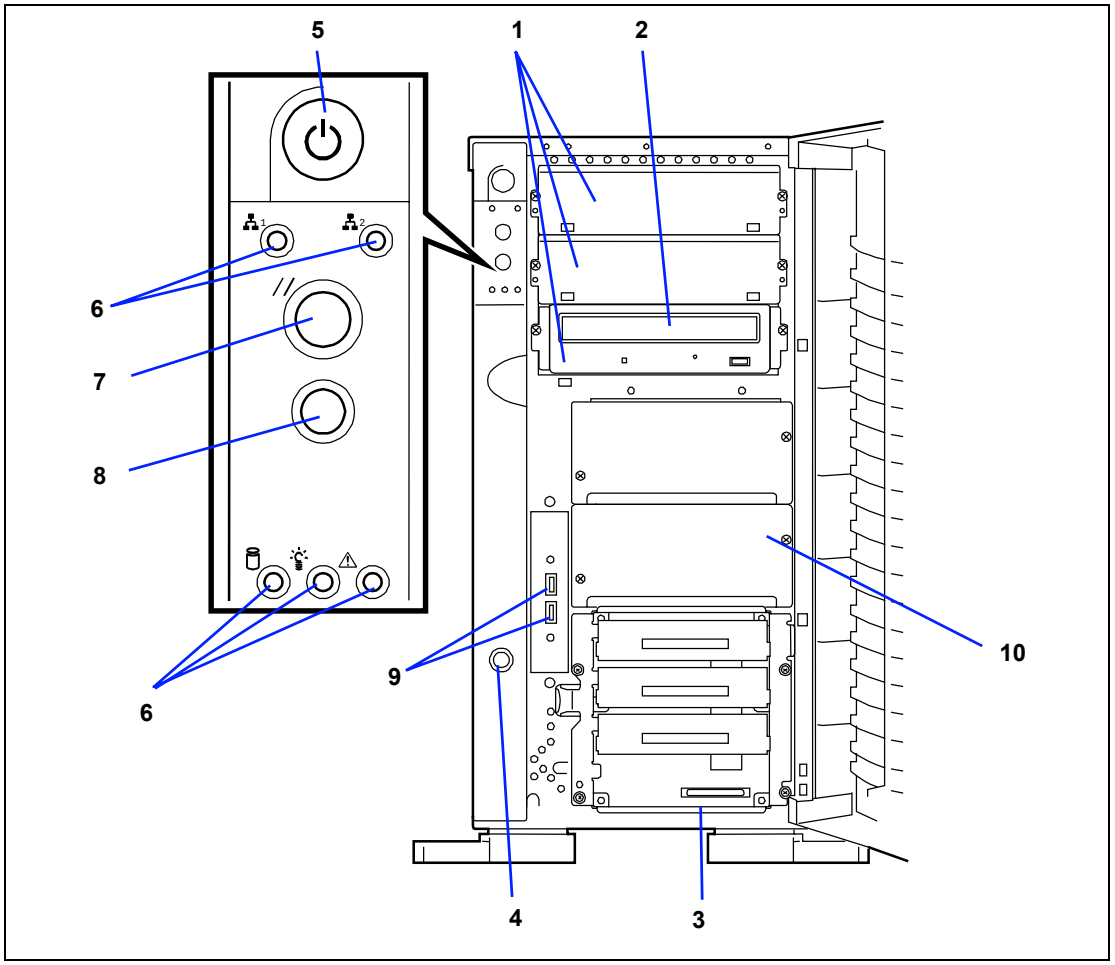
4 LAN ACCESS lamp (green)
Lights in green while the server is connected to the network. Blinking in green indicates the network activity. Numbers printed near the lamps indicate the LAN port number.

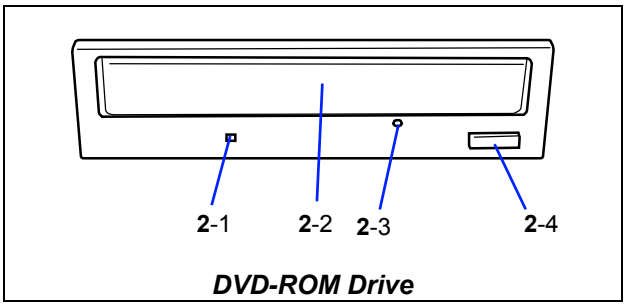
5 DISK ACCESS lamp (green/amber)
Lights in green while the internal hard disk drive is in access. When any one of the internal hard disk drives fails, this lamp lights in amber.

6 POWER/SLEEP lamp (green)
Lights in green when the server is powered on. Goes off when the server is powered off. Blinks when the system is placed in the sleep mode.

7 STATUS lamp (green/amber)
Lights in green while the server is in successful operation. When any error is detected, this lamp lights or blinks in amber.

Front View (Door Opened)





DVD-ROM Drive

1 5.25-inch device bay

Backup tape drives may be installed in the 5.25-inch device bay.

2 DVD-ROM drive

The DVD-ROM drive reads data from the inserted CD/DVD-ROM.

2-1 Access lamp
2-2 Tray
2-3 Emergency hole
2-4 Open/Close button

3 3.5-inch hard disk drive bay

The 3.5-inch hard disk drive bay contains slots for adding hard disk drives having thickness of about 1 inch.

SCSI IDs are fixed to ID0 - ID3 from bottom to top. Hard disk drives are sold separately. Dummy trays are inserted into the empty slots (excluding the slot of ID0).

4 Cover open sensor

The cover open sensor detects the open of the front door.

5 Power switch

The power switch is used to turn on/off the power. If you press the switch once, then the POWER/SLEEP lamp goes on and the power is turned on. If you press the switch again, the power is turned off. The system is forcibly shut down when the power switch is pressed continuously for four seconds or longer.

6 Lamps (see the figure on the previous page)

7 Reset switch

The reset switch is used to reset the server.

8 Dump switch (NMI switch)

The dump switch is used to collect the event logs having occurred in the server.

9 USB connectors

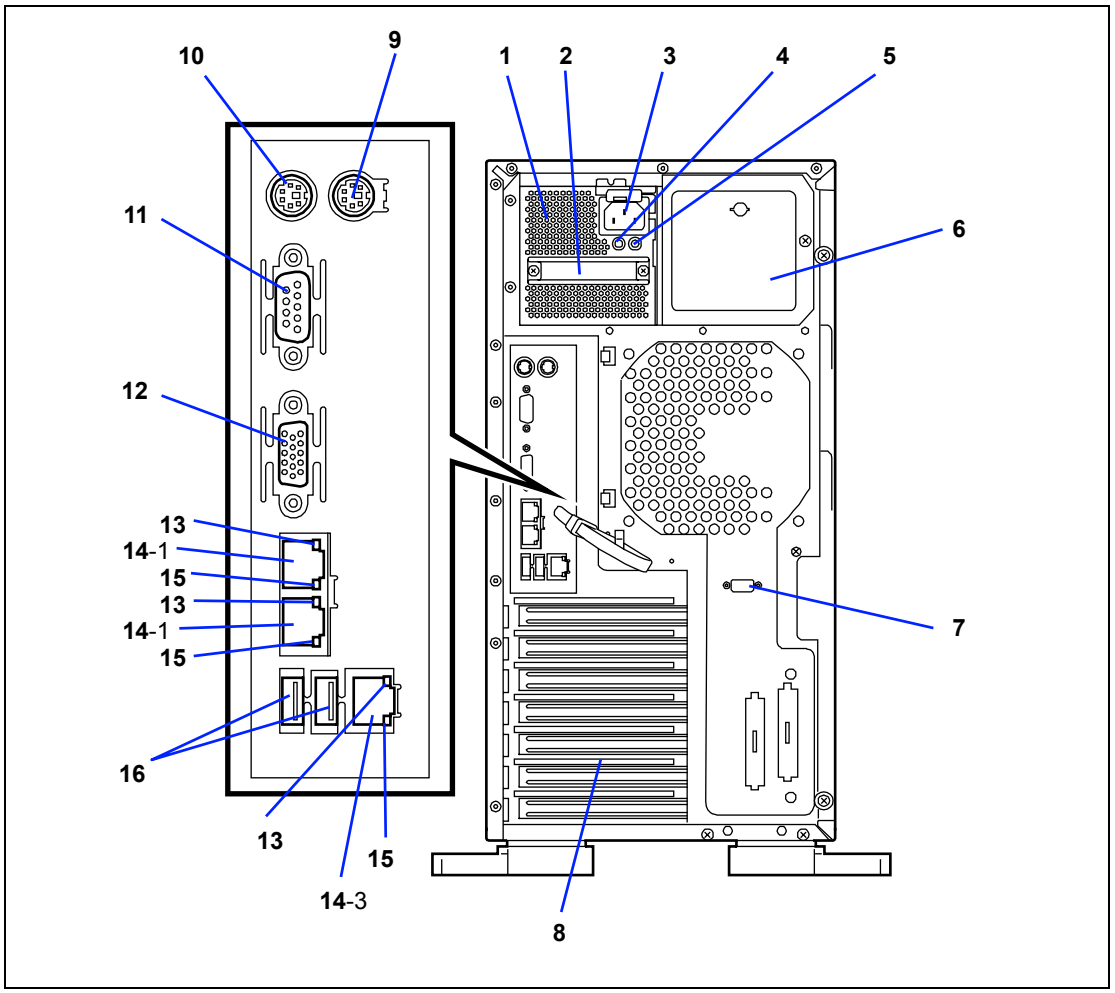
The USB connectors allow the server to connect with devices meeting the USB interface.

10 Additional HDD cage bay

Installing an optional HDD cage allows the server to be equipped with up to eight hard disk drives.

Rear View

The following figure shows the redundant hot-plug power supply model. For the non-redundant power supply model (fixed power supply is installed), you cannot find the items 2, 4, 5, and 6.



1 Power supply
The power unit supplies DC powers to the server.

2 Handle
Grasp this handle install or remove the power supply.

3 AC inlet
The AC inlet is connected with the power cord. An additional power unit also has an AC inlet.

4 POWER lamp
The Power lamp blinks green if the power supply receives the AC power through the power cord. The lamp goes on green when the power of the server is turned on.

5 POWER FAIL lamp
The amber lamp goes on if the power unit is defected.

6 Additional power supply slot
An optional power supply may be installed on the slot.

7 Serial port B connector
The serial port B connector is used to connect the server to a device with the serial interface. The server cannot be directly connected to a leased line through the connector.

8 Additional PCI board slots
Optional PCI boards may be inserted into the slots.

9 Mouse connector
The mouse connector is connected with the mouse coming with the server.

10 Keyboard connector
The keyboard connector is connected with keyboard coming with the server.

11 Serial port A connector
The serial port A connector is connected with a device having the serial interface. The server cannot be directly connected to a leased line through the connector.

12 Monitor connector
The monitor connector is connected with the display unit.

13 LINK/ACT lamp
The LINK/ACT lamp shows the LAN access status.

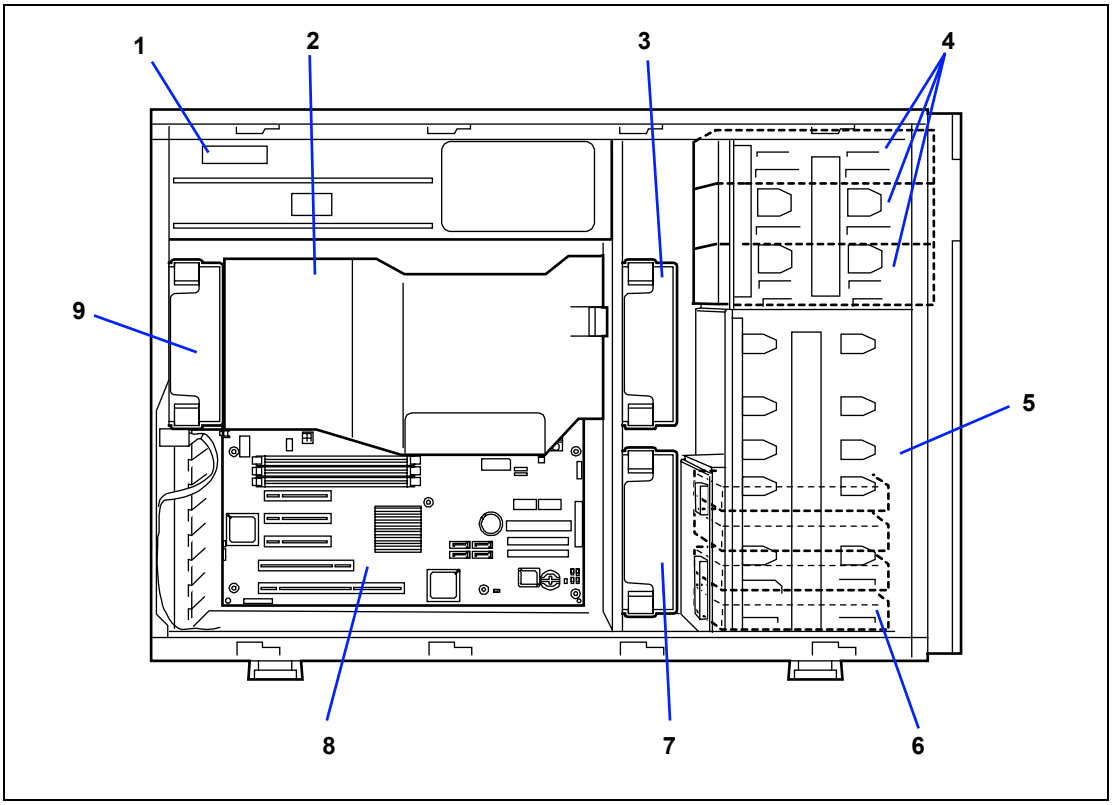
14 LAN connector(s)
The LAN connectors are connected with a network system on LAN. Your server supports 1000BASE-T/100BASE-TX/10BASE-T network subsystem.
14-1 LAN port 1 (onboard LAN)
14-2 LAN port 2 (onboard LAN)
14-3 Management LAN port (100BASE-TX/10BASE-T)

15 Speed lamp
Indicates the transfer rate of onboard LAN ports 1 and 2 and that of management LAN port.

16 USB-1 and USB-2 connectors
The USB-1 and USB-2 connectors are connected with devices accepting the USB interface. Connector 1 to connector 2 are assigned from left to right.

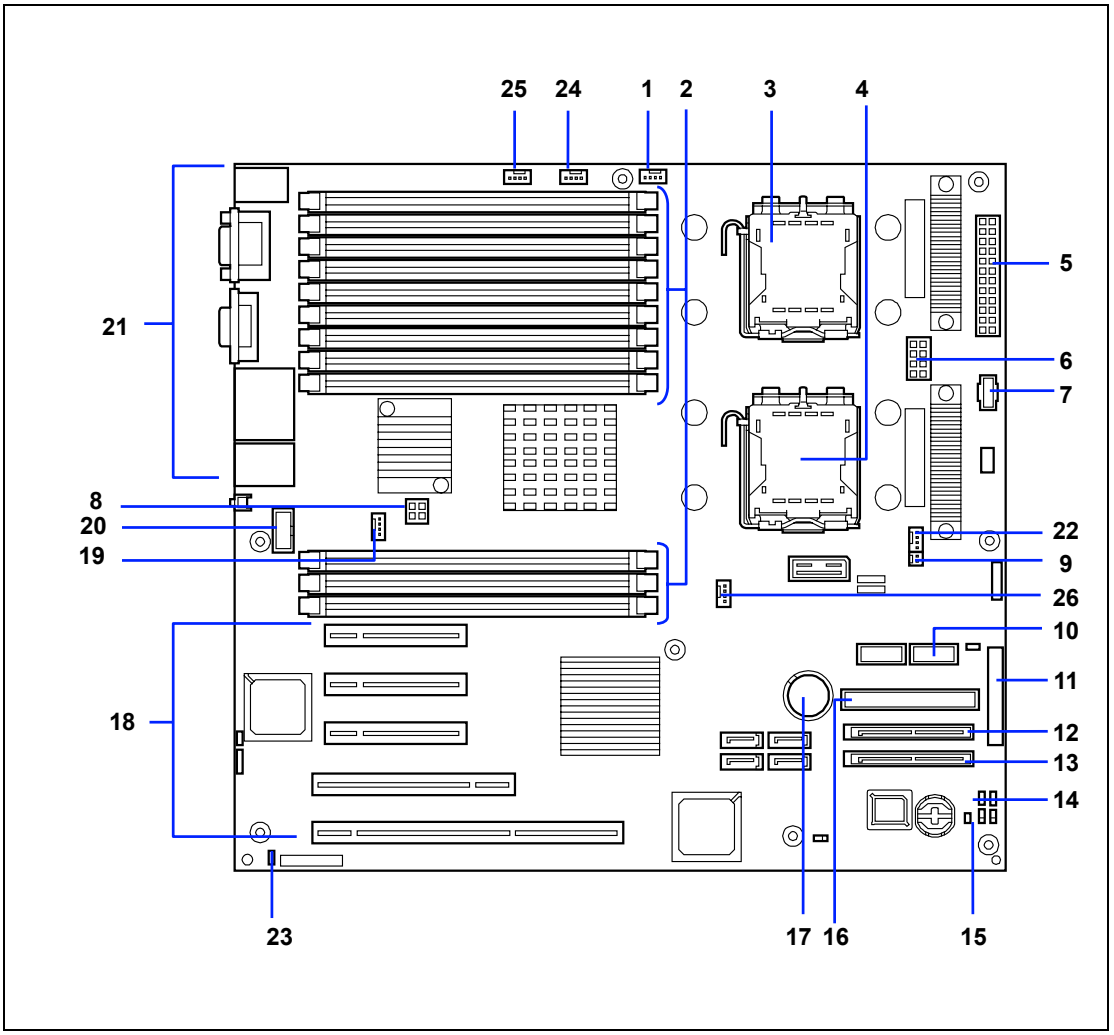
Internal View

The following figure shows an internal view of your system.



1 **Power supply unit**
2 **Duct cover**
3 **Front cooling fan (factory-installed)**
4 **5.25-inch device bays (3 slots)**
Up to two devices can be installed additionally.
5 **HDD cage slot**
Optional HDD cage can be installed.
6 **3.5-inch hard disk drive bay**
Up to four hard disk drives can be installed.
7 **Cooling fan (option)**
8 **Mother board**
9 **Rear cooling fan unit (factory-installed)**

MOTHER BOARD



1 Front cooling fan connector

2 DIMM sockets

(slot numbers 33, 32, 31, 23, 22, 21, 13, 12, 11, 41, 42 and 43 from top to bottom)
A couple of DIMMs should be added at a time (the DIMM installation unit is called group).

3 Processor 1 socket

4 Processor 2 socket

5 Power connector

6 Power connector

7 Power signal connector

8 Power connector

9 Cooling fan signal connector (when optional redundant fan is used)

10 Front USB connector

11 Front panel interface connector

12 SAS2 connector

13 SAS1 connector

14 Jumper switch for clearing CMOS

15 Jumper switch for clearing BIOS password

16 IDE connector (for DVD-ROM drive)

17 Lithium battery

18 PCI board slots
(slots PCI #1, PCI #2, PCI #3, PCI #4, and PCI #5 arranged from bottom to top)
PCI #1: 64-bit, 100MHz
PCI #2: 32-bit, 33MHz
PCI #3 to #5: PCI EXPRESS (8-bus)

19 Rear cooling fan connector

20 Serial port B connector

21 Connectors for external devices

22 Cooling fan connector (when optional redundant fan is used) / water-cooling pump connector (see Chapter 9)

23 Side cover open sensor connector

24 Water cooling unit connector (See Chapter 9.)

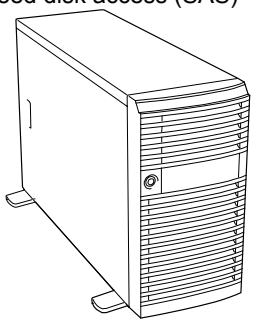
25 Water cooling unit connector (See Chapter 9.)

26 Water cooling unit connector (See Chapter 9.)

STANDARD FEATURES

High performance

- Dual-core 64-bit Intel® Xeon® Processor
  N8100-1239F: 1.6GHz/4MB Cache
  N8100-1240F: 3GHz/4MB Cache
  N8100-1325F: 2GHz/4MB Cache
  N8100-1326F: 2.33GHz/4MB Cache
  N8100-1298F: 2.33GHz/8MB Cache
- High-speed 1000BASE-T/100BASE-TX/ 10BASE-T interface (1000Mbps/100Mbps/10Mbps supported)
- High-speed disk access (SAS)



Expandability

- Wide variety of optional I/O slots
  Three PCI EXPRESS (8-bus) slots
  One 64-bit, 100 MHz PCI-X slot
  One 32-bit, 33 MHz PCI slot
- Large memory of up to 48GB
- Two network ports and one management LAN port
- Remote power-on feature
- Up to two Intel Xeon processors
- Two hot-plug power supplies (Redundancy)
- USB 2.0 supported
- Convert to rack-mount type (N8143-61F Rack Conversion Kit is required.)

High-reliability

- Memory monitoring feature (single-bit error correction/double-bit error detection)
- Memory redundant feature (mirroring, sparing)
- CPU/memory degradation feature (logical isolation of a failed device)
- Bus parity error detection
- Temperature detection
- Error notification
- Internal CPU fan monitoring feature
- Internal voltage monitoring feature
- Redundant power supplies (hot-swap)
- Disk array (option)
- Auto-rebuild feature (hot-swap)
- BIOS password feature
- Security feature (security lock)

Many Available Features

- Graphic accelerator "Pilot GA" support
- El Torito Bootable CD-ROM (no emulation mode) format support
- POWER switch mask
- Software power-off
- Remote power-on feature
- AC-LINK feature
- Remote console feature

Self-diagnosis

- Power On Self-Test (POST)
- Test and Diagnosis

Management Utilities

- NEC ESMPRO
- NEC DianaScope
- Disk array utilities
- Remote monitoring by EXPRESSSCOPE

Maintenance Features

- Off-line Maintenance Utility
- Memory dump feature using the DUMP (NMI) switch

Power Saving Feature

- Sleep feature
  (available for Windows 2003)

Easy and Fine Setup

- NEC EXPRESSBUILDER (system setup utility)
- SETUP (BIOS SETUP utility)

SYSTEM FUNCTIONS

The following subsections describe system functions.

Degradation Feature

The degradation feature automatically isolates a failed DIMM or processor to assure continuous operation of the server when the POST (Power On Self-Test, self-diagnosis program after power on) detects such a DIMM or processor.

Failed DIMMs and processors may be identified on the screen that the POST displays, or with the BIOS setup utility, "SETUP." They may also be identified on the system that has the NEC ESMPRO installed.

Remote Power-On Feature (Wake On LAN)

The remote power-on function turns on the server through a network. It sends a special packet from the management computer to a remote server to turn it on if the server is off-powered.

To enable this feature, use the BIOS setup utility, "SETUP." (See Chapter 4.)

The remote power-on feature is not available in the following cases. Press the POWER switch once to start the OS, and turn off the server in an appropriate procedure.

- Abnormal previous system shut-down
- No power supply to the server (due to turned-off breaker, disconnected power cord, power blackout, etc.)

AC-LINK Feature

When the power cord of the server is connected to an uninterruptible power supply (UPS) unit, the server supports the power linkage feature that enables control over the power supply from the UPS to the server. The AC-LINK feature can be enabled or disabled with the Server menu of the BIOS setup utility, "SETUP." (See Chapter 4.)

SECURITY

To help prevent unauthorized entry or use of the system, the system includes a full lockable front panel and Server Management software that monitors the system intrusion switches.

Security with Mechanical Locks and Monitoring

The front door of the server contains a mechanical lock to prevent access to the front of the computer chassis.

The computer chassis includes an intrusion switch for the front cover and intrusion/interlock switches for the left side cover (as viewed from the front). When any these covers are opened, the switch transmits an alarm signal to the system board, where server management software processes the signal. The side cover switch also operates as interlock switch.

Software Locks via the System Setup Utility

The BIOS SETUP Utility provides a number of security features to prevent unauthorized or accidental access to the system. Once the security measures are enabled, access to the system is allowed only after the user enters the correct password(s). For example:

- Enable the keyboard lockout timer so that the server requires a password to reactivate the keyboard and mouse after a specified time-out period – 2 to 120 minutes.
- Set and enable an administrative password.
- Set and enable a user password
- Set secure mode to prevent keyboard or mouse input and to prevent use of the front panel reset and power switches.
- Activate a hot-key combination to enter secure mode quickly.

NEC EXPRESSBUILDER

The CD-ROM that comes with the server contains a setup utility called "NEC EXPRESSBUILDER."

The major functions of the NEC EXPRESSBUILDER are:

- To install the Operating System.

  "Express Setup" helps you to install the Windows Operating System. (See Chapter 5.)

- To diagnose the system.

  NEC EXPRESSBUILDER includes the System Diagnostics to check your server. (See Chapter 6.)

- To create support disks.

  Use this function to create the support disks used to boot the utilities from the floppy disk, or the OEM floppy disk used for a manual installation of Windows. (See Chapter 6.)

- To update the BIOS.

  Use this function to update the system BIOS or firmware of the server. (See Chapter 6.)

- To update the Windows System*

  "Update Express5800 system" in Master Control Menu (Windows-based NEC EXPRESSBUILDER feature) updates the several drivers of Microsoft Windows. (See Chapter 6.)

- To install the utilities.

  NEC EXPRESSBUILDER includes some management software for Windows (NEC ESMPRO, NEC DianaScope and so on) and maintenance utilities for DOS (System diagnostics, Off-line Maintenance Utility and so on).

  You can install the applications for Windows from Master Control Menu and install the utilities for DOS from Tools menu. (See Chapter 6.)

- To read the online documents*

  You can refer to the online documents from Master Control Menu. (See Chapter 6.)

* These functions are available under the Windows system.

NOTE: Some features among those listed above can be used from the remote computer via cross cable, modem, or LAN (remote console). See Chapter 6 for details.

NEC ESMPRO

The NEC ESMPRO is server management software that runs on the OS. The NEC ESMPRO includes the NEC ESMPRO Manager for the server monitoring terminal and the NEC ESMPRO Agent for the NEC Express server.

> **NOTE:** For details of major functions of the NEC ESMPRO, system configuration and setups with the NEC ESMPRO, see Chapter 6. Available functions of the NEC ESMPRO depend on the OS you install. Ask your sales agent for details.

Off-line Maintenance Utility

The Off-line Maintenance Utility is used for maintenance and fault analysis of the server. This utility is usually used by the service representative.

See Chapter 8 for details.

System Diagnostic Utility

The system diagnostic utility contained in the NEC EXPRESSBUILDER is useful to detect hardware failures. See Chapter 7 for details.

NEC DianaScope

The NEC DianaScope is a software for the remote management of the server. The NEC DianaScope can control the managed server even if OS is not running on the managed server.

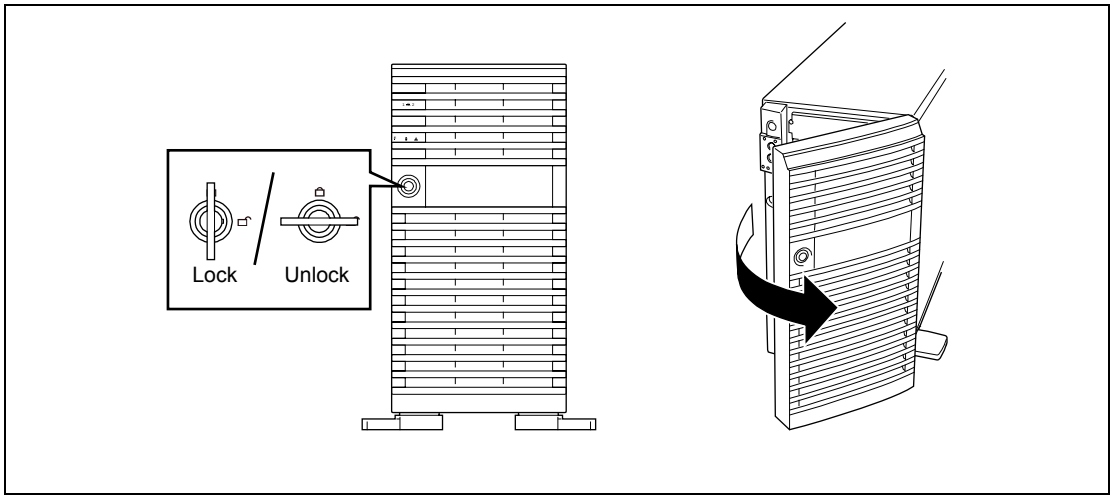
See Chapter 6 and online document in the NEC EXPRESSBUILDER.

USING NEC EXPRESS SERVER

This section describes basic operations of your server including how to use devices such as the DVD-ROM drive. See Appendix B for notes on using the CD/DVD-ROM, and accessories including the keyboard and the mouse.

Front Door

Open the front door to power on/off the server, to access the DVD-ROM drive and 5.25-inch devices, and to install/remove hard disk drives to the 3.5-inch device bays.



IMPORTANT:

- To open the front door, you must unlock the door with the provided security key.
- Some software provides a command to eject the DVD-ROM drive tray or a media in the drive. Before executing such a command, make sure that the front door is open. Otherwise, the drive tray or a media will hit the front door. It may cause a device failure to occur.

Insert the provided security key into the key hole and turn the key to unlock the front door. Then, hold the front door edges and gently pull the door away from the computer chassis. When you close the front door, lock the door with the key for security.

IMPORTANT: Do not open the front door by hanging the handle at the upper left corner with your claws. If the front door cannot be opened easily, hold the upper left and lower left corners of the front door with your hands and then pull it out toward you.

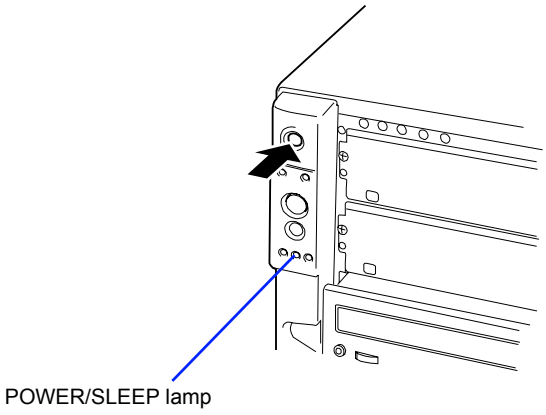
POWER Switch

Use the POWER switch to turn on/off the server.

Power On

Press the POWER switch on the front of the computer chassis.

The POWER/SLEEP lamp lights in green.



IMPORTANT:

- If the power cord is connected to a power control device such as a UPS (Uninterruptible Power Supply), make sure that the power control device is powered.
- If the power cord is connected to the server, an initial diagnosis of the hardware starts. The POWER switch does not work while in diagnosis. Wait for about 10 seconds, then press the POWER switch.
- Always allow POST to complete before powering down your system (see the next subsection for POST).

POST

POST (Power On Self-Test) is the self-diagnostic program stored in the system memory.

When you power on the server, the system automatically runs POST to check the mother board, ECC memory module, CPU module, keyboard, and mouse. POST also displays messages of the BIOS setup utility, such as the start-up message, while in progress.

With the factory setup of the server, the NEC logo appears on the display unit while POST is in progress. (To display the POST check results, press **Esc**.)

> **NOTE:** You can set the POST check results to appear on the display unit without pressing **Esc**. To do so, select "Enabled" for "Boot-time Diag Screen" under the Advanced menu of the BIOS setup utility.

The POST check results should be checked in the following cases.

- When the server is used for the first time.
- When the server appears to fail.
- When the server beeps for many times between power-on and OS start-up.
- When an error message appears on the display unit.

POST Execution Flow

The following describes the progress of POST in the chronological order.

IMPORTANT:

- Do not make key entries or perform mouse operations while POST is in progress.
- Some system configurations may display the message "Press Any Key" to prompt a key entry. This message is driven by BIOS of an installed optional board. Make sure to read the manual that comes with the optional board before any key entry.
- Powering on the server, after you installed or removed an optional PCI board or moved it to another slot, may display the message that indicates incorrect board configuration and suspend POST. In such a case, press **F1** to continue POST. Board configuration can be made using the utility described later.

1. After a few seconds from power-on, POST starts checking the memory. The count message of the basic and expansion memory appears at top left on the display unit screen. The memory check may takes a few minutes to complete depending on the memory size of the server. Also, it may take approximately one minute for the screen display to appear after rebooting the server.
2. Some messages appear upon completion of the memory check. These messages appear to indicate that the system has detected the CPU, keyboard, and mouse.
3. After a few while, POST displays the message prompting you to launch the utility for onboard network controller. The message will appear twice (for the number of LAN controllers). You may ignore these messages.
4. POST then detects the internal SAS controller and display the message prompting you to launch the SAS BIOS setup utility. (Ignore the message. POST will automatically proceed a few seconds later.)

   ```
   Press Ctrl-C to start LSILogic Configuration Utility....
   ```

   To launch the SAS BIOS setup utility, press **Ctrl** and **C**. See Chapter 4 for setup and parameters.

   The server automatically restarts POST all over again when you exit the SAS BIOS utility.
5. POST displays SAS ID numbers used by the connected SAS devices on the screen.

6. After a few seconds, POST displays the following message prompting you to launch the BIOS setup utility, SETUP, stored in the system memory of the server. This message appears at bottom left on the screen.

   ```
   Press <F2> to enter SETUP
   ```

   Launch the BIOS setup utility when you need to change the settings to meet the requirements for the server. As long as the above message is not displayed with an error message, you don't have to launch the utility. (Ignore the message. POST will automatically proceed.)

   To launch the SETUP utility, press **F2** while the above message is displayed. See Chapter 4 for setup and parameters.

   The server automatically restarts POST all over again when you exit the SETUP utility.

7. If the server has an optional disk array controller installed, POST displays the message prompting you to launch the RAID configuration utility and the disk array BIOS setup utility.

   Refer to the manual provided with the disk array controller for detail instructions.

   POST will automatically proceed a few seconds later.

8. If you set a password using the BIOS setup utility, SETUP, the password entry screen appears upon successful completion of POST.

   Up to three password entries will be accepted. Three incorrect password entries disable the server to boot. In such a case, turn off the power and wait about ten seconds before turning on to boot the server.

   IMPORTANT: Do not set a password before installing an OS.

9. The OS starts when POST completes.

POST Error Messages

When POST detects an error, it displays an error message on the display unit screen. See Chapter 8 for POST error codes.

> **IMPORTANT:** Take a note on the messages displayed before consulting with your service representative. Alarm messages are useful information for maintenance.

Power Off

Follow the procedure below to power off the server. If the power cord of the server is connected to a UPS, refer to the manual that comes with the UPS or the manual for the application that controls the UPS.

> **IMPORTANT:** Always allow POST to complete before turning off the server.

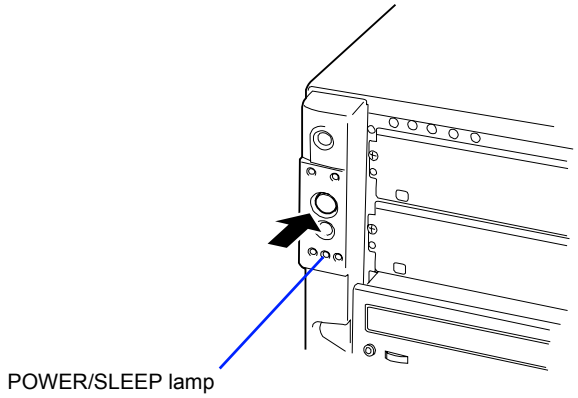
1. Shut down the OS.
2. Press the POWER switch on the front of the server.
   The POWER/SLEEP lamp goes off.
3. Power off peripheral devices.

Power-Saving Mode

You can use the POWER switch as the SLEEP switch if the ACPI compliant operating system is installed in your system.

The SLEEP switch allows you to save almost all power of the server (power-saving mode or sleep mode).

NOTE: Some PCI boards do not support this feature.



Press the SLEEP switch on the front of the server to place the server in the power-saving mode. (The POWER/SLEEP lamp blinks.) In the power-saving mode, the server retains the memory data and the status of the previous operations.

To resume the original state, press the POWER switch. (It may take a little time to resume the original state.)

NOTE: The operational level in the power-saving mode depends on the OS in use. (Available for Windows Server 2003.)

IMPORTANT: Do not change system configuration while turning into the power-saving mode or in the power-saving mode. Otherwise, you may fail to resume the original state.

DVD-ROM Drive

Your server is provided with the DVD-ROM drive on its front to read data from a DVD-ROM (read-only disk) or a CD-ROM (read-only compact disk). The DVD/CD-ROM provides larger and faster data read than the floppy disk.

⚠ CAUTION

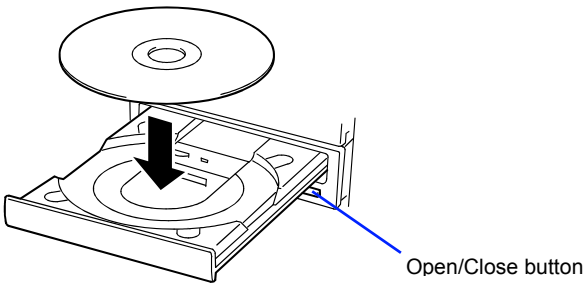
Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Do not leave the tray ejected from the DVD-ROM drive.

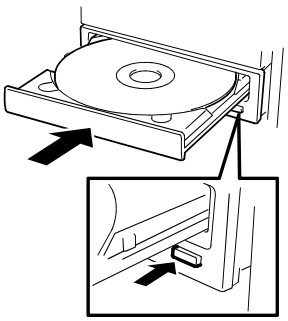
Setting and Removing the Disc

1. Make sure that the server is powered (the POWER/SLEEP lamp is lit) before inserting a disc into the DVD-ROM drive.
2. Press the Open/Close button on the front of the DVD-ROM drive to eject the tray.

   The tray comes out.
3. Put the disc on the tray carefully and securely with the character printed surface facing upward.



4. Press the Open/Close button or gently push on the tray front. The tray is automatically retracted into the DVD-ROM drive.



IMPORTANT: If the DVD-ROM drive produces large noise after the setting of a disc, set the disc again.

To remove a disc, press the Open/Close button to eject the tray, as described for inserting it, and then take the disc out of the tray. (The orange-lit access lamp indicates ongoing disk access. The Open/Close button does not work while the lamp is lit.)

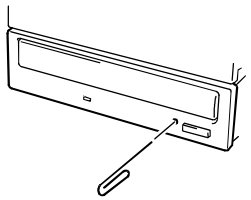
Your OS may have a command to eject the tray.

When you have taken out the disc, retract the tray back in place.

When you fail to eject:

When you fail to eject the DVD-ROM tray with the Open/Close button and take out the disc from the server, follow the procedure below.

1. Press the POWER switch to power off the server. (The POWER/SLEEP lamp goes off.)
2. Insert a metal pin of approximately 1.2 mm in diameter and 100 mm in length (a straightened large paper clip will make a substitute) into the emergency hole on the right front of the DVD-ROM drive and gently push it in until the tray is ejected.



IMPORTANT:

- Do not use a toothpick or plastic stick that is easy to break.
- If the above procedure does not let you take out the disc, contact your sales agent.

3. Hold the tray and pull it out.
4. Take out the disc.
5. Push the tray back into position.

Use of the Disc

Keep the following notes in mind to use the DVD/CD-ROM for the server:

- For the disk which does not conform to the CD standard, the playback of such a disk with the DVD drive is not guaranteed.
- Do not drop the disc.
- Do not place anything on the disc or bend the disc.
- Do not attach any label onto the disc.
- Do not touch the signal side (nothing is printed on this side) with your hand.
- Place the disc with its printed side upward and gently put it on the tray.
- Do not scratch the disc or write anything directly on it with a pencil or ball-point pen.
- Keep the disc away from cigarette smoke.
- Do not leave the disc in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- When dust or fingerprints are attached on the disc, wipe the disc from its center to edge with a dry soft cloth slowly and gently.
- Use the dedicated cleaner to clean the disc. Do not use record spray/cleaner, benzene, or thinner.
- Keep the disc in the dedicated case when not in use.

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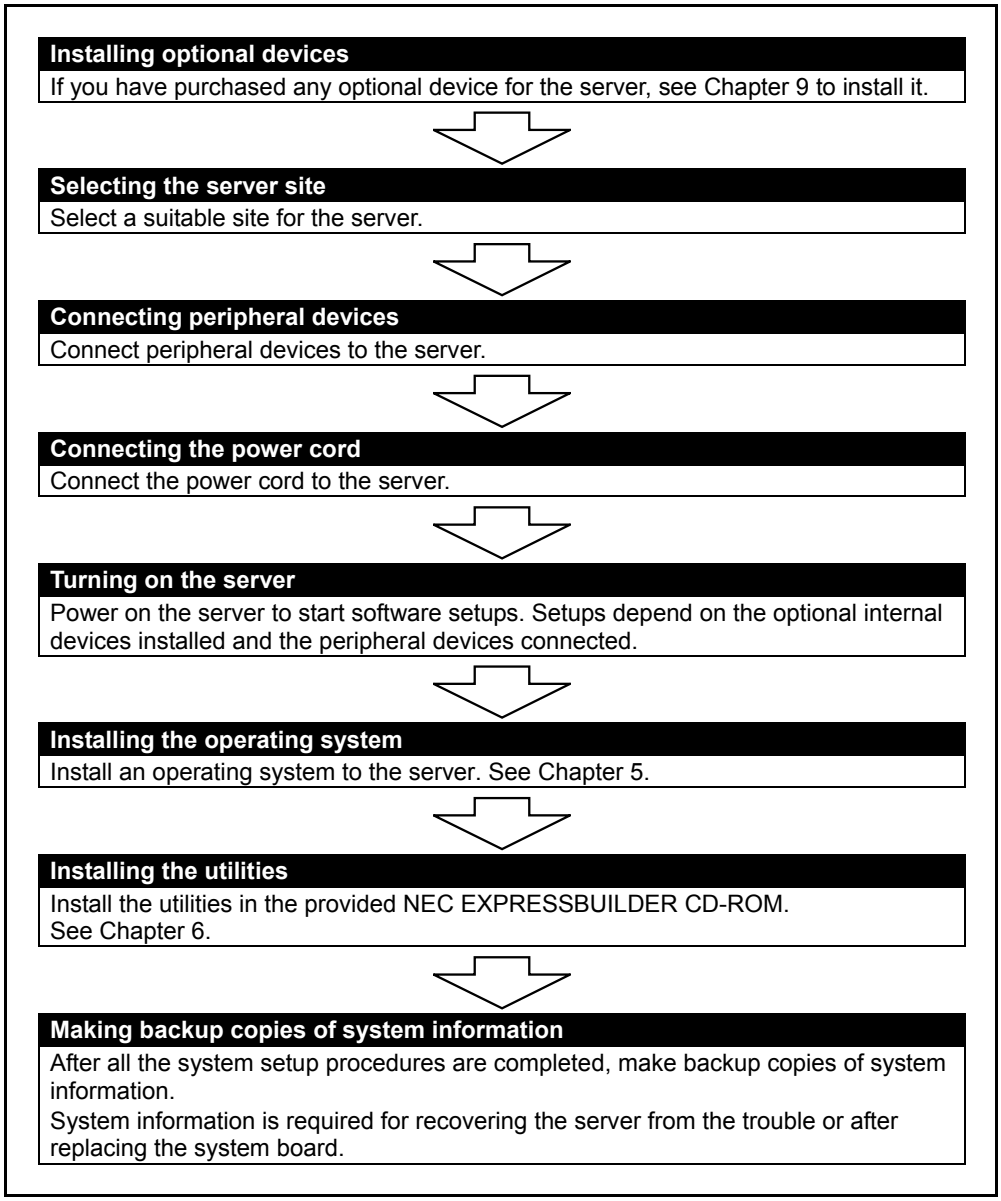
Chapter 3

Setting Up Your Server

This chapter describes how to set up your server appropriate for your system, on a step-by-step basis.

SETUP FLOW

Follow the flowchart below to set up the server.


Installing optional devices
If you have purchased any optional device for the server, see Chapter 9 to install it.
Selecting the server site
Select a suitable site for the server.
Connecting peripheral devices
Connect peripheral devices to the server.
Connecting the power cord
Connect the power cord to the server.
Turning on the server
Power on the server to start software setups. Setups depend on the optional internal devices installed and the peripheral devices connected.
Installing the operating system
Install an operating system to the server. See Chapter 5.
Installing the utilities
Install the utilities in the provided NEC EXPRESSBUILDER CD-ROM.
See Chapter 6.
Making backup copies of system information
After all the system setup procedures are completed, make backup copies of system information.
System information is required for recovering the server from the trouble or after replacing the system board.

INSTALLING OPTIONAL DEVICES

To install any optional device, see Chapter 9, "Upgrading Your Server," for the installation procedure. Proceed to the next section if you have no optional devices to install.

IMPORTANT: There are third-party products (memory modules, hard disk drives, etc.) available for the server in the markets. However, NEC recommends that you should use NEC products for stable operation. NEC assumes no liability for data errors and failures due to malfunction of the server resulted from installation of those third-party products.

SELECTING SERVER SITE

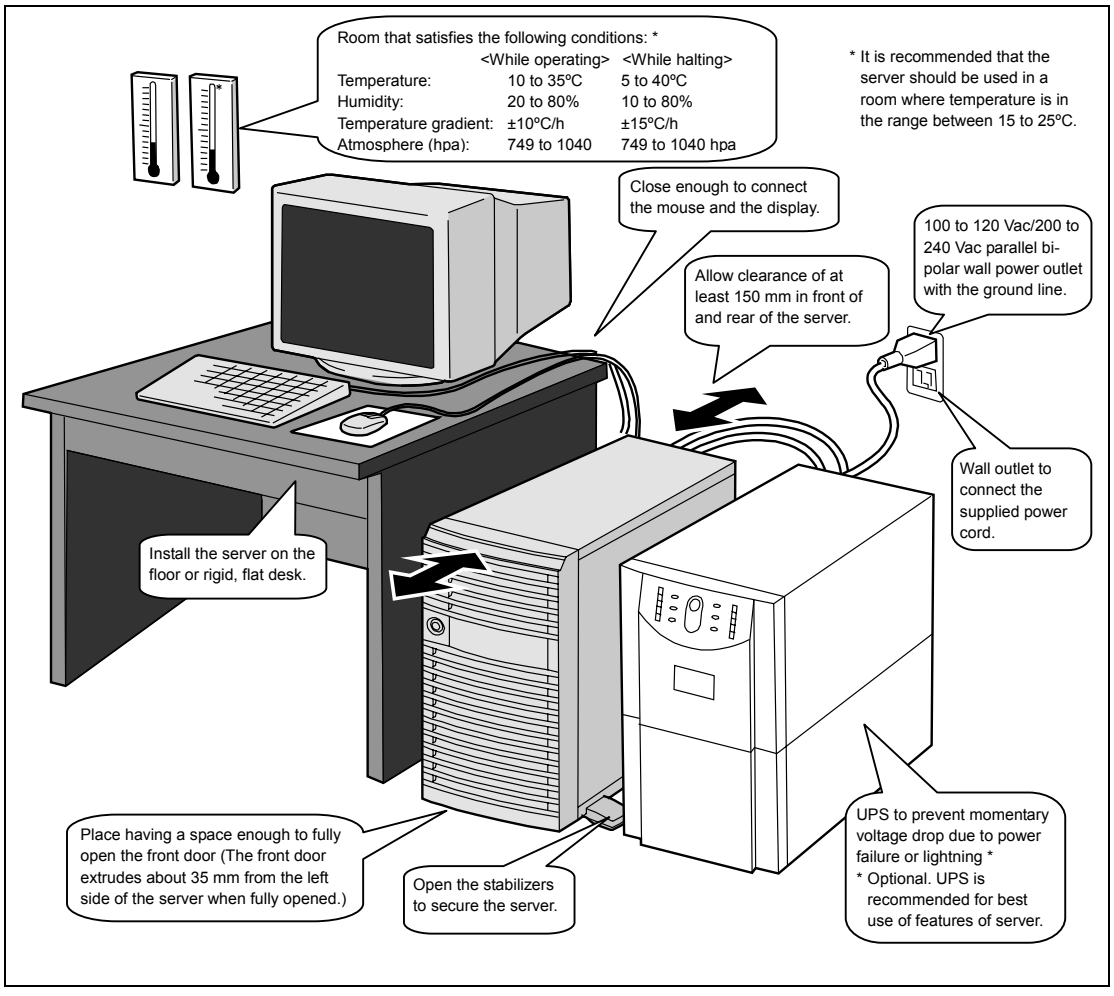
Read the following precautions before selecting a suitable site for your server. The following describes installation of the server and connections to the server.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Never attempt to lift the server with two or less persons.
- Do not install the server in any place other than specified.
- Do not use the server in a place with corrosive gas in presence.

The following figure illustrates a site suitable for installing the server.


Room that satisfies the following conditions: *
<While operating> <While halting>
Temperature: 10 to 35ºC 5 to 40ºC
Humidity: 20 to 80% 10 to 80%
Temperature gradient: ±10ºC/h ±15ºC/h
Atmosphere (hpa): 749 to 1040 749 to 1040 hpa
* It is recommended that the server should be used in a room where temperature is in the range between 15 to 25ºC.
Close enough to connect the mouse and the display.
Allow clearance of at least 150 mm in front of and rear of the server.
100 to 120 Vac/200 to 240 Vac parallel bi-polar wall power outlet with the ground line.
Wall outlet to connect the supplied power cord.
Install the server on the floor or rigid, flat desk.
Place having a space enough to fully open the front door (The front door extrudes about 35 mm from the left side of the server when fully opened.)
Open the stabilizers to secure the server.
UPS to prevent momentary voltage drop due to power failure or lightning *
* Optional. UPS is recommended for best use of features of server.

When you have selected a server site, hold the server by its bottom with at least three persons and carry it to the site, then place it slowly and gently.

IMPORTANT:

- Do not hold the server by its front door to lift the server. The front door may be disengaged and damage the server.
- Open the stabilizers and secure the server to the site.
- Do not hold the handle on the power module when carrying the server.

Do not place the server in the following places. Placing the server in such places may cause malfunctions of the server.

- Places with drastic changes in temperature (e.g., near a heater, air conditioner, or refrigerator)
- Places with strong vibration
- Places with corrosive gas in presence, near chemicals, or with possibilities of chemicals sprayed over
- On a non-antistatic carpet
- Places with possibilities of falling objects
- Places where a power outlet that shares the ground line with another (especially the one to which a device with large power consumption is connected) must be used for the server
- Do not install the server near equipment that generates power noise (e.g., contact spark at power-on/power-off of commercial power supply through a relay). (To install the server near equipment that generates power noise, ask your sales agent for separating the power wiring or installing a noise filter.)

CONNECTING PERIPHERAL DEVICES

Connect peripheral devices to the server. The server is provided with connectors for wide variety of peripheral devices on its rear panel. The figure on the next page illustrates available peripheral devices for the server in the standard configuration and locations of the connectors for the devices.

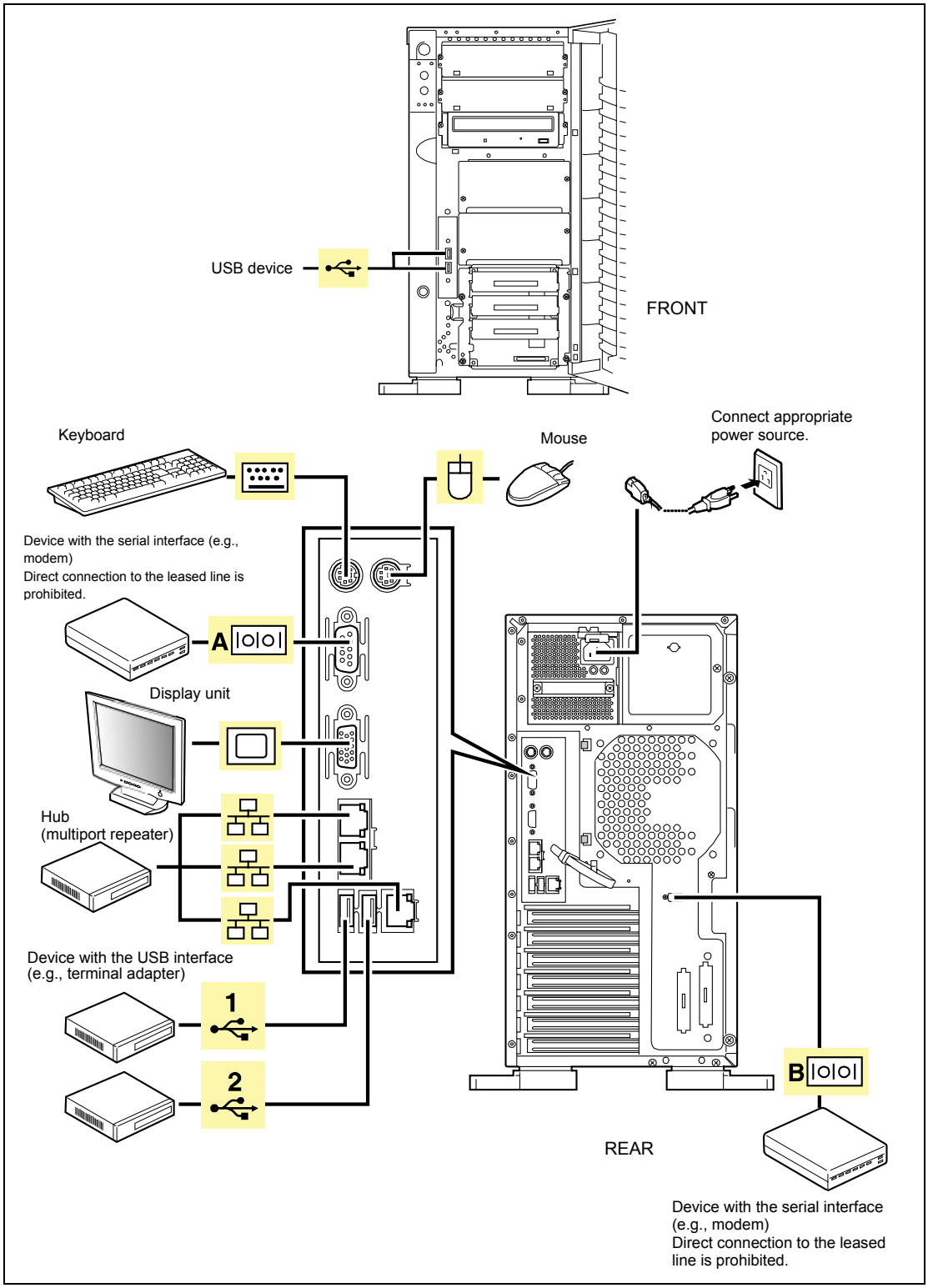
⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Do not use any damaged cable connector.
- Do not use any unauthorized interface cable.
- Do not use the server with any loose interface connection.
- Do not step on the interface cable or place any heavy object on it.

IMPORTANT:

- Power off the server and a peripheral device before connection. Connecting a powered peripheral device to the powered server will cause malfunctions and failures.
- To connect a third-party peripheral device or interface cable to the server, consult with your sales agent for availability of such a device or cable. Some third-party devices may not be used for the server.
- To connect the provided keyboard and mouse, plug their connectors to the server with the "Δ" mark on the connectors facing right.
- A leased line cannot be connected directly to the serial port connectors.


USB device
FRONT
Keyboard
Mouse
Connect appropriate power source.
Device with the serial interface (e.g., modem)
Direct connection to the leased line is prohibited.
A
Display unit
Hub (multiport repeater)
Device with the USB interface (e.g., terminal adapter)
1
2
B
REAR
Device with the serial interface (e.g., modem)
Direct connection to the leased line is prohibited.

CONNECTING POWER CORD

Connect the provided power cord to the server.

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

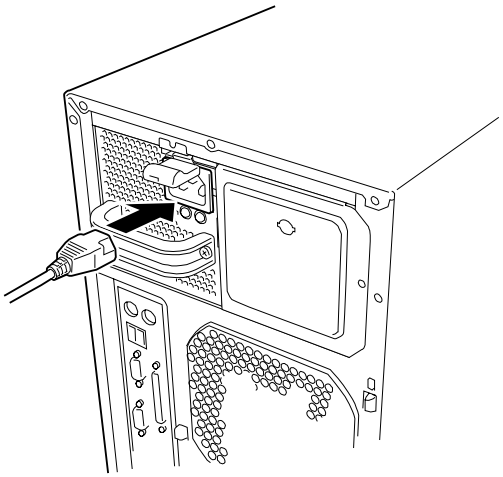
- Do not hold the power plug with a wet hand.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Do not plug the power cord in to an improper power source.
- Do not connect the power cord to an outlet that has an illegal number of connections.
- Insert the power plug into the outlet as far as it goes.
- Use the authorized power cord only.

1. Plug the provided power cord into the power receptacle on the rear of the server.
2. Plug the other end of the power cord into the wall outlet.



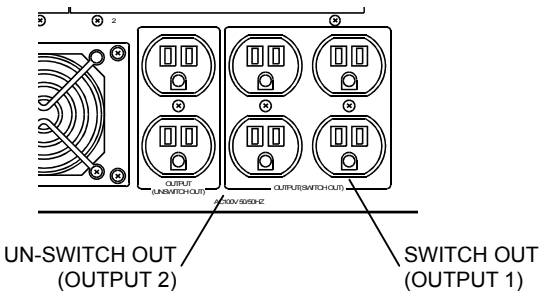
To connect the power cord from the server to an interruptive power supply (UPS), use service outlets on the rear of the UPS.

The UPS service outlets are categorized into two groups: SWITCH OUT and UN-SWITCH OUT. (They may be called "OUTPUT1" and "OUTPUT2".)

To control power supply with an application that controls the UPS, connect the power cord to an SWITCH OUT outlet.

For constant power supply, connect the power cord to a UN-SWITCH OUT outlet. (Connect the modem that is in service for 24 hours to this outlet.)

<Example>



When the power cord from the server to a UPS, change the BIOS setup of the server to link with power supply from the UPS.

Change a parameter for "AC Link" under the Server menu of the BIOS setup utility. See Chapter 4 for details.

TURNING ON THE SERVER

Turn on the server and follow the on-screen instructions for setup.

IMPORTANT: Before turning on the server:

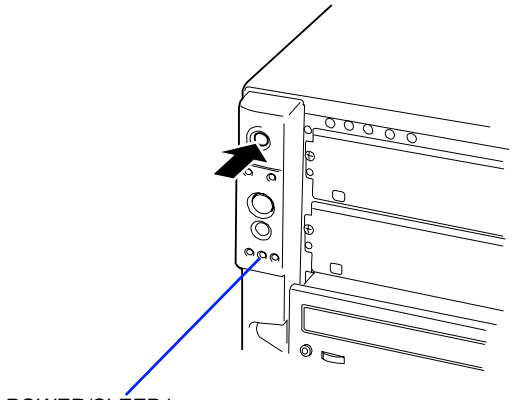
- Some optional boards require setups with the SETUP utility before installation. If the server has a PCI board with the PCI-to-PCI bridge installed, the SETUP utility is enabled to launch. Check on the board specifications to find out whether it requires pre-installation setups before actually installing the board.
- Some installed optional devices or connected peripheral devices require setups before proceeding to the next step.

To use the server with no optional devices installed besides the graphic board, install a desired OS to the server.

1. Make sure that the floppy disk drive contains no floppy disk and the DVD-ROM drive contains no bootable DVD/CD-ROM.
2. Power on the display unit and other external devices.
3. Open the front door and press the POWER switch.

NOTES:

- If the power cord is connected to the power control unit such as the UPS, turn on the power control unit.
- Connect the power cord and wait a few seconds before pressing the POWER switch. The POWER switch does not work in a few seconds after connecting the power cord due to the optional RMC (Remote Management Card) firmware start-up.



The POWER/SLEEP lamp on the front of the server comes on.

In a few seconds, the NEC logo appears on the screen and the Power On Self-Test (POST) begins.

The POST runs automatically when you power on the server or reset it with a keyboard operation (**Ctrl** + **Alt** + **Delete**). The POST runs diagnostics, initializes the server, sets interrupt vectors, detects installed peripheral devices, and boots the operating system (if installed). See Chapter 2 for detailed description on POST.

If the server halts before completing the POST, the POST emits a beep code indicating a fatal system error requiring immediate attention. (See Chapter 8, "Troubleshooting," for troubleshooting information.)

During memory test, the POST displays the amount of memory it was able to access and test. Depending on the amount of installed memory, it may take several minutes to complete the memory test.

NOTE: The factory-set is defined to hide the POST screen with the NEC logo screen. You can always change the NEC logo screen to the POST screen by pressing **Esc**. To change the start-up screen, use the BIOS setup utility, "SETUP." (See Chapter 4 for details.)

During the POST, you will see the banner message to prompt you to launch the BIOS SETUP utility stored in ROM on system board or on an installed option board.

Start the BIOS SETUP utility appropriate to your system environment to change the BIOS setup. For the BIOS SETUP for the server, see Chapter 4. For the BIOS SETUP for the option board, refer to the manual that comes with the option board.

IMPORTANT: Always allow POST to complete before turning off your system.

INSTALLING OPERATING SYSTEM

See Chapter 5 for installing the Microsoft Windows Server 2003 operating system.

To install the other operating system, contact your service representative.

INSTALLING UTILITIES

Install the utilities that come with the server. See Chapter 6 for details.

MAKING BACKUP COPIES OF SYSTEM INFORMATION

The system information includes the current BIOS settings and any specific information for the server.

Save the information after completing the system setup.

Without the backup data, you will not be able to recover the information.

You can save the information by the following process.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive and reboot the system.
2. Select [Tools].
3. Select [Off-line Maintenance Utility].
4. Select [System Information Management].
5. Insert a floppy disk into the floppy disk drive.
6. Select [Save].

Chapter 4

Configuring Your Server

Configuration and setup utilities are used to change your system configuration. You can configure your system, as well as option boards you may add to your system, using the BIOS Setup utility. Several unique system parameters are configured using the BIOS Setup utility, which is stored in the system FLASH memory.

If your system has been factory configured, the BIOS Setup utility or RAID Configuration Utility do not need to be run unless you want to change the password or security features, add certain types of option boards or devices, or upgrade your mother board.

This chapter also provides information on several system configuration parameters that are set by jumpers on the system board. However, these parameters do not usually require change.

Use NEC EXPRESSBUILDER CD-ROM to create the device driver diskettes.

SYSTEM BIOS (BIOS SETUP UTILITY)

The BIOS Setup utility is provided to make basic hardware configuration for the server. This utility is pre-installed in the flash memory of the server and ready to run.

The server is configured with the correct parameters using the BIOS Setup utility and shipped in the best conditions. Thus, you don't need to use the BIOS Setup utility in most cases. However, you might wish to use the BIOS Setup utility in the cases described below.

IMPORTANT:

- The BIOS Setup utility is intended for system administrator use only.
- The BIOS Setup utility allows you to set a password. The server is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system parameters of the BIOS Setup utility. With the User password, system parameters available for viewing and changing are limited.
- Do not set any password before installing the OS.
- The server contains the latest version of the BIOS Setup utility. Dialog boxes appear on your BIOS Setup utility, thus, may differ from descriptions in this manual. If you find anything unclear, see the online help or ask your service representative.

Starting SETUP Utility

A few seconds after powering on, the following message appears at bottom left on the screen. If NEC logo appears instead, press **Esc**.

```
Press <F2> to enter SETUP or Press <F12> to boot from Network
```

Press **F2** to start the BIOS Setup utility and display its Main menu.

If you have previously set a password with the BIOS Setup utility, the password entry screen appears. Enter the password.

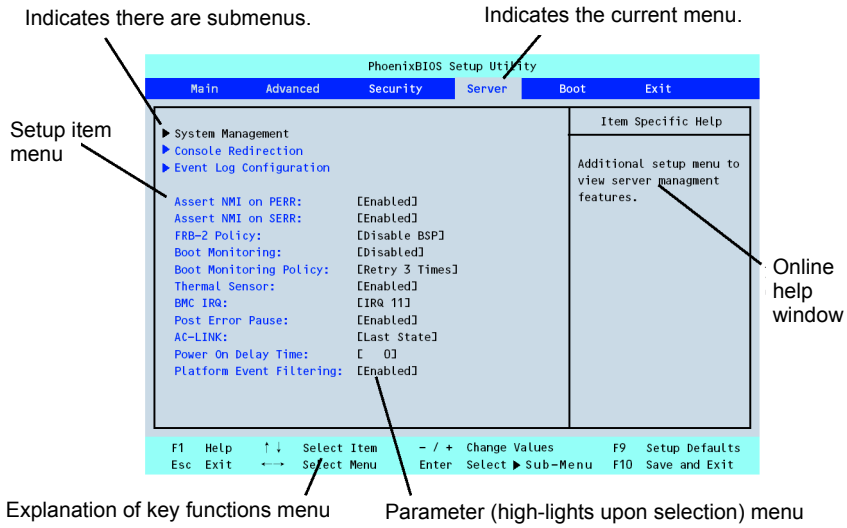
```
Enter password:[                ]
```

Up to three password entries will be accepted. If you fail to enter the password correctly for three consecutive times, the server halts. (You can no longer proceed.) Power off the server.

NOTE: The server is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system parameters. With the User password, system parameters available for viewing and changing are limited.

Description on On-Screen Items and Key Usage

Use the following keyboard keys to work with the BIOS Setup utility. These keys are also listed at the bottom of the menu screen.


Indicates there are submenus.
Indicates the current menu.
Setup item menu
Online help window
Explanation of key functions menu
Parameter (high-lights upon selection) menu
PhoenixBIOS Setup Utility
Main Advanced Security Server Boot Exit
System Management
Console Redirection
Event Log Configuration
Assert NMI on PERR: [Enabled]
Assert NMI on SERR: [Enabled]
FRB-2 Policy: [Disable BSP]
Boot Monitoring: [Disabled]
Boot Monitoring Policy: [Retry 3 Times]
Thermal Sensor: [Enabled]
BMC IRQ: [IRQ 11]
Post Error Pause: [Enabled]
AC-LINK: [Last State]
Power On Delay Time: [0]
Platform Event Filtering: [Enabled]
Item Specific Help
Additional setup menu to view server managment features.
F1 Help ↑ ↓ Select Item - / + Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

Cursor (↑, ↓):	Move cursor up and down. The cursor moves only to the settings that you can change.
Cursor (←, →):	Move between menus.
– and **+**:	Select the previous value (–) or the next value (+) for the field.
Enter	Execute command or select ➤ submenu.
Esc	Exit the current menu and return to the previous menu.
F1:	Get Help about an item. Press **Esc** to return to the previous menu.
F9:	Load default configuration values for this menu.
F10:	Save configuration values and exit.

Configuration Examples

The following describes examples of configuration required to use software-link features or for system operations.

Time and Date Settings

You can also change the time and date settings via the operating system commands.

Select [Main] - [System Time].

Select [Main] - [System Date].

Link with Management Software

To control power supply of the server with NEC ESMPRO Manager via the network

Select [Advanced] - [Advanced Chipset Control] - [Wake On LAN/PME] - [Enabled].

Select [Server] - [AC LINK] - [Stay Off].

Hard Disk Drive

To check the hard disk drive status

Select [Main] - [Primary IDE Master] and check the status indications.

To configure the RAID drive with SATA hard disk drives

Select [Advanced] - [Peripheral Configuration] - [SATA Controller Mode Option] - [Enhanced]. Then select [Advanced] - [Peripheral Configuration] - [SATA RAID] - [Enabled], and configure the RAID drive.

IMPORTANT: Be sure to set to [Enabled] after executing [Load Setup Defaults] or CMOS clear. Leaving this parameter as the factory-set value (Disabled) may destroy the data in hard disk drive.

UPS

To link power supply with the UPS

- To power on the server when power is supply from the UPS

  Select [Server] - [AC LINK] - [Power On].

- To keep the server off-powered even when power is supplied from the UPS

  Select [Server] - [AC LINK] - [Stay Off].

- To keep the server off-powered even when power is supplied from the UPS if the POWER switch was used to power off

  Select [Server] - [AC LINK] - [Last State].

Boot

To change the boot order of devices connected to the server

Select [Boot] and specify the boot order.

To display POST check results

Select [Advanced] - [Boot-time Diagnostic Screen] - [Enabled].

You can also press **Esc** while the NEC log is on the POST screen.

To control from the remote console

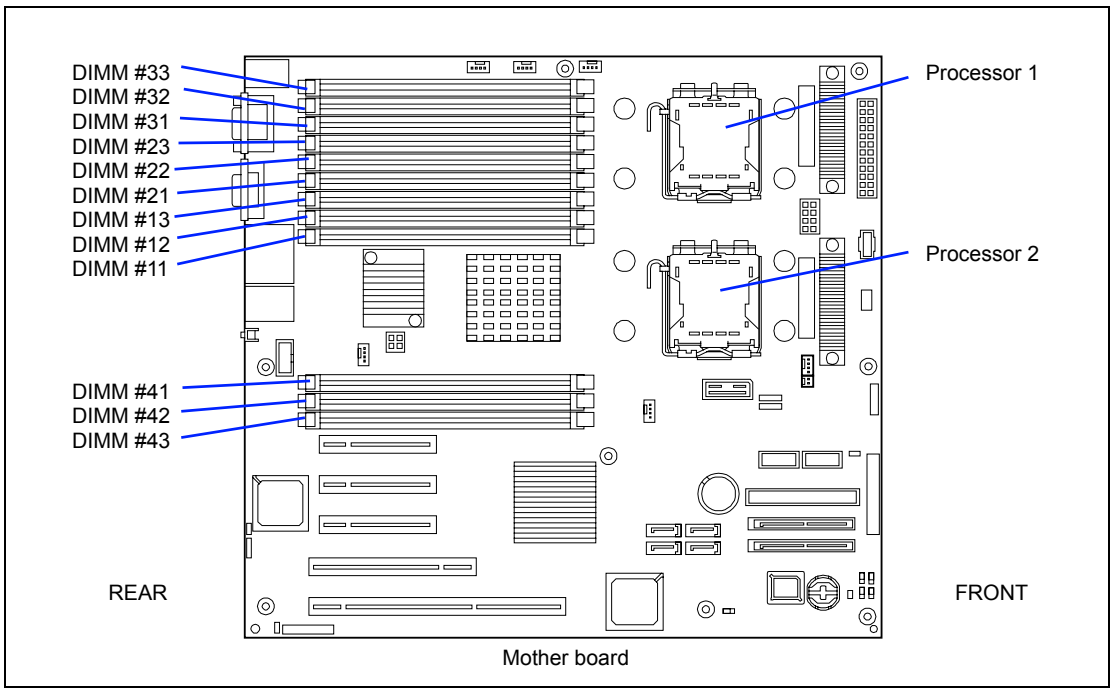
Select [Server] - [Console Redirection] and set each item.

Memory

To check the installed memory (DIMM board) status

Select [Advanced] - [Memory Configuration] and check the status indications.

The on-screen DIMM group numbers and socket locations on the mother board are associated as shown in the following figure.



To clear the memory (DIMM board) error information

Select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes] and reboot.

To run power-on memory test

Select [Advanced] - [Memory Configuration] - [Extended RAM Step] - [1MB] and reboot.

CPU

To check the installed CPU status

Select [Main] - [Processor Settings] and check the status indications.

The on-screen processor numbers and socket locations on the motherboard are associated as shown in the figure on the previous page.

To clear the CPU error information

Select [Main] - [Processor Settings] - [Processor Retest] – [Yes] and reboot.

Keyboard

To set Numlock

Select [Advanced] - [Numlock] – [On]/[Off].

Event Log

To clear event logs

Select [Server] - [Event Log Configuration] - [Clear all Event Logs], press **Enter**, and select [Yes].

Security

To set passwords on the BIOS

Select [Security] - [Set Supervisor Password] and enter a password.

Select [Security] - [Set User Password] and enter a password.

Set Supervisor password first, then User password.

External Devices

To set up external devices

Select [Advanced] - [Peripheral Configuration] and set up each device.

Internal Devices

To install the disk array controller board or SCSI controller board

Select [Advanced] - [PCI Configuration] - [PCI Slot n Option ROM] - [Enabled].
n: slot number

To clear the hardware configuration data (after installing/removing internal devices)

Select [Advanced] - [Reset Configuration Data] - [Yes].

Saving the Configuration Data

To save the current configuration data

Select [Exit] - [Exit Saving Changes] or [Save Changes].

To discard changes to the current configuration data

Select [Exit] - [Exit Discarding Changes] or [Discard Changes].

To load the user-defined default

Select [Exit] - [Load Setup Defaults].

To load the custom defaults

Select [Exit] - [Load Custom Defaults].

To save the custom defaults

Select [Exit] - [Save Custom Defaults].

Menu and Parameter Descriptions

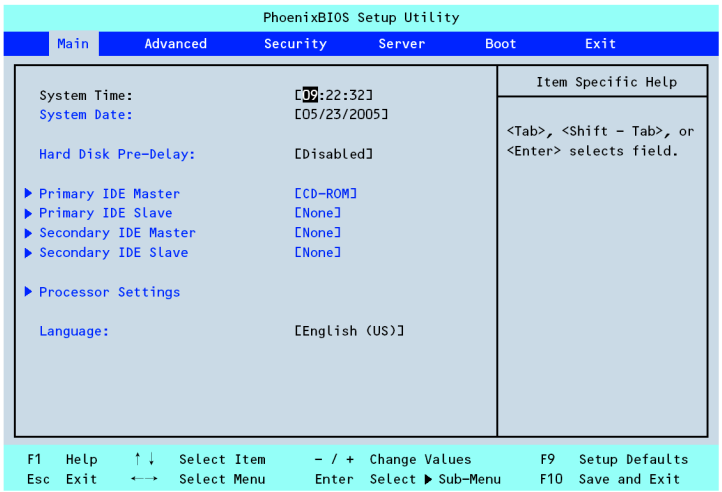
The SETUP utility has the following six major menus:

- Main
- Advanced
- Security
- Server
- Boot
- Exit

To set minute functions, select a submenu from the above menus. The following describes available functions and parameters, as well as the factory-set, for each menu.

Main

If BIOS SETUP is started, the Main menu appears first. If you select a menu item preceded by symbol ➤ and press **Enter**, the appropriate submenu appears.



The items which can be set on the Main menu screen and their functions are described below.

Option	Parameter	Description	Your Setting
System Time	HH:MM:SS	Set the system time.	
System Date	MM/DD/YYYY	Set the system date.	
Hard Disk Pre-Delay	[Disabled] 3 seconds 6 seconds 9 seconds 12 seconds 15 seconds 21 seconds 30 seconds	Allows slower spin-up drives to come ready.	
Primary IDE Master Primary IDE Slave Secondary IDE Master Secondary IDE Slave	–	Shows the information on the device connected to each channel on the submenu. The settings of some items may be changed. However, leave the items as they are at the shipment.	
Processor Settings	–	Shows the processor settings submenu. See the next page.	
Language	[English (US)] Français Deutsch Español Italiano	Select which language BIOS displays.	

[ ]: Factory-set

IMPORTANT: Check and adjust the system clock before the operation if any of the following conditions is applicable.

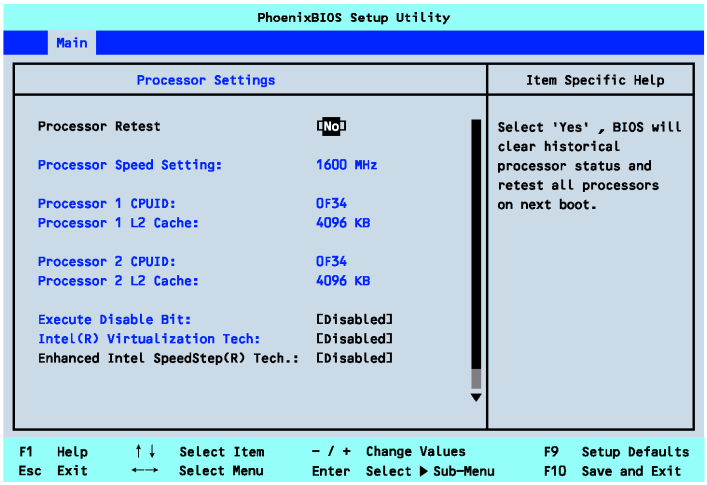
- After carriage of device
- After storage of device
- After the device is entered into the pause state under the environmental condition enduring device operation (temperature: 10°C - 35°C, humidity: 20% - 80%)

Check the system clock at the rough rate of once per month. When the system clock is installed in a system requiring high time precision, it is recommended to use a time server (NTP server).

If the system clock is remarkably delayed or advanced as the passage of time in spite of adjustment, contact your service representative for maintenance.

Processor Settings

If you select "Processor Settings" on the Main menu, the screen shown below appears.


PhoenixBIOS Setup Utility
Main
Processor Settings
Item Specific Help
Processor Retest [No]
Processor Speed Setting: 1600 MHz
Processor 1 CPUID: 0F34
Processor 1 L2 Cache: 4096 KB
Processor 2 CPUID: 0F34
Processor 2 L2 Cache: 4096 KB
Execute Disable Bit: [Disabled]
Intel(R) Virtualization Tech: [Disabled]
Enhanced Intel SpeedStep(R) Tech.: [Disabled]
Select 'Yes' , BIOS will clear historical processor status and retest all processors on next boot.
F1 Help ↑↓ Select Item - / + Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

See the table below for the items.

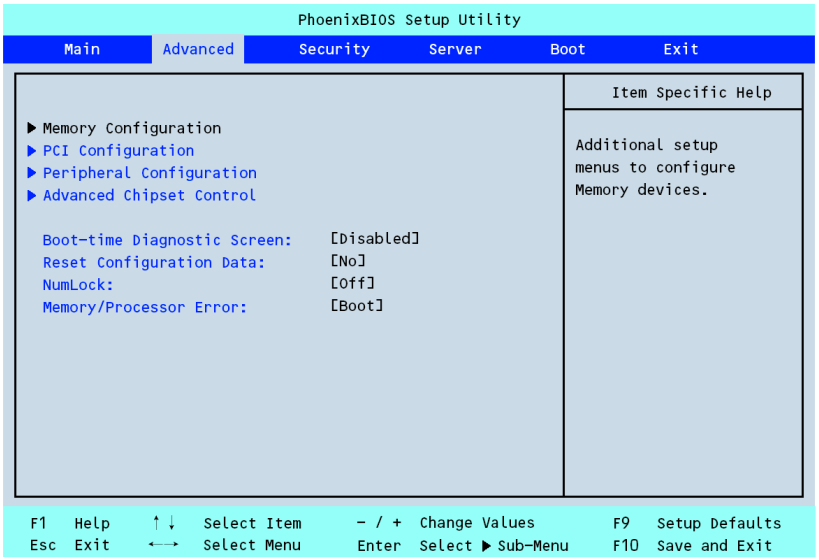
Option	Parameter	Description	Your Setting
Processor Retest	[No] Yes	If you select [Yes], BIOS will clear historical processor status and retest all the processors on the next boot. This parameter is automatically reset to "No" at the next boot.	
Processor Speed Setting	nnn GHz	Displays clock speed for the processor. (View only)	
Processor 1 CPUID	Numeral (0Fxx) Disabled Not Installed	Displays CPU ID for processor 1. "Disabled" indicates that the processor is defected. "Not Installed" indicates that processor 1 is not installed. (View only)	
Processor 1 L2 Cache	–	Displays the secondary cache size for processor 1.	
Processor 2 CPUID	Numeral (0Fxx) Disabled Not Installed	Displays CPU ID for processor 2. "Disabled" indicates that the processor is defected. "Not Installed" indicates that processor 2 is not installed. (View only)	
Processor 2 L2 Cache	–	Displays the secondary cache size for processor 2.	
Execute Disable Bit	[Disabled] Enabled	Displayed only when the CPU supports Execute Disable Bit.	
Intel(R) Virtualization Tech	[Disabled] Enabled	Specify whether to enable or disable the virtualization technology of Intel processor.	
Enhanced Intel SpeedStep(R) Tech.	[Disabled] Enabled	Specify whether to enable or disable the Enhanced Intel SpeedStep® Technology.	

[ ]: Factory-set

Advanced

The Advanced menu appears if you move the cursor to the position of "Advanced."

If you select a menu item preceded by symbol ➤ and press **Enter**, the appropriate submenu appears.



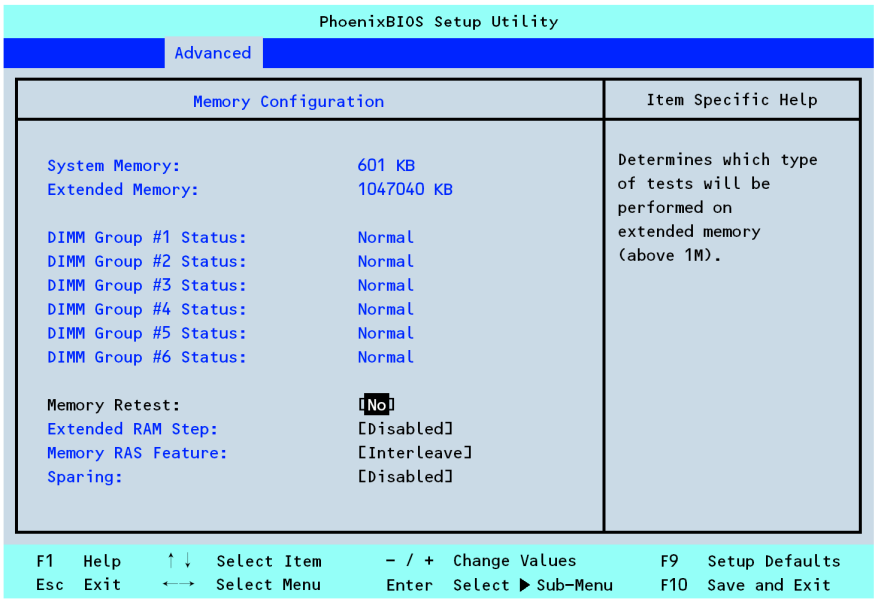
See the table below for the items.

Option	Parameter	Description	Your Setting
Memory Configuration	–	Displays submenu.	
PCI Configuration	–	Displays submenu.	
Peripheral Configuration	–	Displays submenu.	
Advanced Chipset Control	–	Displays submenu.	
Boot-time Diagnostic Screen	[Disabled] Enabled	Specify whether the power-on self-test (POST) running screen is displayed or not on booting. If disabled, the BIOS will display the NEC logo during POST. Press **Esc** to switch to the POST running screen.	
Reset Configuration Data	[No] Yes	Select "Yes" if you want to clear the system configuration data stored in POST. This parameter is automatically reset to "No" at the next boot.	
NumLock	On [Off]	Specify whether to enable or disable the Numlock feature at system start-up.	
Memory/Processor Error	[Boot] Halt	Specify whether to stop POST execution if a memory or processor error was detected during POST.	

[ ]: Factory-set

Memory Configuration

The following screen appears if you select "Memory Configuration" on the Advanced menu.


PhoenixBIOS Setup Utility
Advanced
Memory Configuration
Item Specific Help
System Memory: 601 KB
Extended Memory: 1047040 KB
DIMM Group #1 Status: Normal
DIMM Group #2 Status: Normal
DIMM Group #3 Status: Normal
DIMM Group #4 Status: Normal
DIMM Group #5 Status: Normal
DIMM Group #6 Status: Normal
Memory Retest: [No]
Extended RAM Step: [Disabled]
Memory RAS Feature: [Interleave]
Sparing: [Disabled]
Determines which type of tests will be performed on extended memory (above 1M).
F1 Help ↑ ↓ Select Item - / + Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

See the table below for the items.

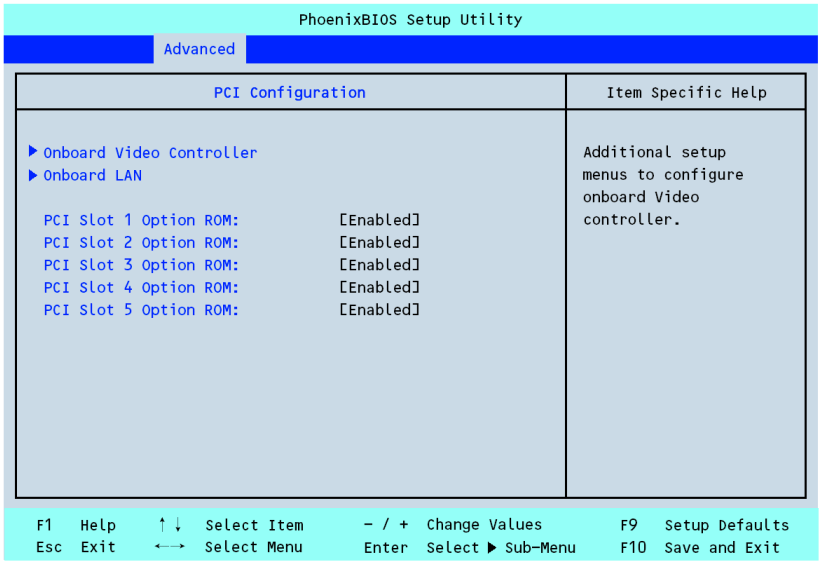
Option	Parameter	Description	Your Setting
System Memory	–	Indicates the total capacity of the base memory. (View only)	
Extended Memory	–	Indicates the total capacity of the memory available for OS. (View only)	
DIMM Group #1 - #6 Status	Normal Disabled Not installed	Indicates the current memory status. (View only) "Normal" indicates that the memory devices operate normally. "Disabled" indicates that one or more memory devices are defected. "Not Installed" indicates that no memory devices are installed. On-screen group numbers and DIMM sockets on mother board are associated as follows. Group #1: DIMM #1-1, #2-1 Group #2: DIMM #3-1, #4-1 Group #3: DIMM #1-2, #2-2 Group #4: DIMM #3-2, #4-2 Group #5: DIMM #1-3, #2-3 Group #6: DIMM #3-3, #4-3 Each group is composed of two DIMMs of interleave type.	
Memory Retest	[No] Yes	If you select [Yes], BIOS will clear historical memory status and retest all the DIMMs on the next boot. This parameter is automatically reset to "No" at the next boot.	

Option	Parameter	Description	Your Setting
Extended RAM Step	1MB 1KB Every Location [Disabled]	Specify whether to execute a memory test for extended memory or not. If the test is executed, specify the block size.	
Memory RAS Feature	[Interleave] Mirror	Disables or enables memory mirroring feature. See "DIMM" in Chapter 9 for details.	
Sparing	[Disabled] Enabled	Specify whether to enable or disable online spare memory feature.	

[ ]: Factory-set

PCI Configuration

The following screen appears if you select "PCI Configuration" on the Advanced menu. If you select a menu item preceded by symbol ➤ and press **Enter**, the appropriate submenu appears.


PhoenixBIOS Setup Utility
Advanced
PCI Configuration
Item Specific Help
▶ Onboard Video Controller
▶ Onboard LAN
PCI Slot 1 Option ROM: [Enabled]
PCI Slot 2 Option ROM: [Enabled]
PCI Slot 3 Option ROM: [Enabled]
PCI Slot 4 Option ROM: [Enabled]
PCI Slot 5 Option ROM: [Enabled]
Additional setup menus to configure onboard Video controller.
F1 Help ↑ ↓ Select Item - / + Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

See the table below for the items.

Option	Parameter	Description	Your Setting
PCI Slot 1 - 5 Option ROM	[Enabled] Disabled	Displays the submenu to specify whether to enable or disable the BIOS on the device (board) connected to PCI slot. Set this item to "Enabled" when: • installing graphics accelerator board • the disk array controller or SCSI controller is connected with the hard disk drive which contains an OS Set this item to "Disabled" when: • the LAN controller which contains ROM BIOS is used but the board does not provide network booting. Disabling Option ROM Scan saves memory consumption and time for startup.	

[ ]: Factory-set

– Onboard Video Controller

Option	Parameter	Description	Your Setting
VGA Controller	[Enabled] Disabled	Specify whether the onboard video controller is enabled or disabled.	
Onboard VGA Option ROM Scan	[Auto] Force	Specify whether to execute option ROM scan of onboard video controller automatically or forcibly.	

[ ]: Factory-set

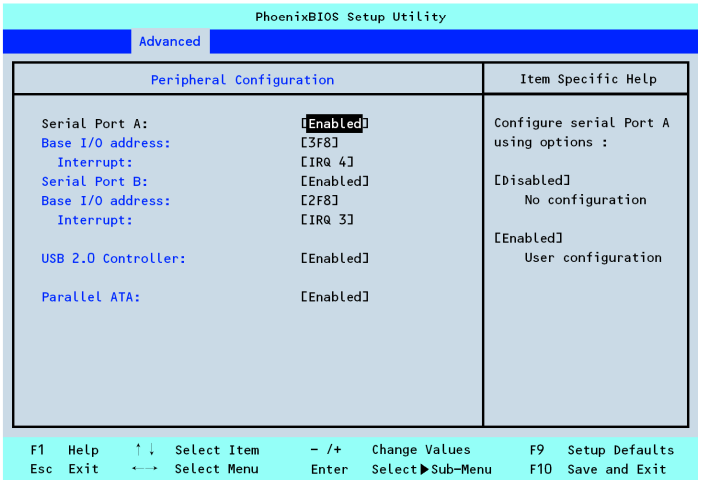
– Onboard LAN

Option	Parameter	Description	Your Setting
LAN Controller	Disabled [Enabled]	Specify whether the onboard LAN controller is enabled or disabled.	
LAN1 Option ROM Scan	Disabled [Enabled]	Specify whether the BIOS scan of onboard LAN controller 1 is enabled or disabled.	
LAN2 Option ROM Scan	Disabled [Enabled]	Specify whether the BIOS scan of onboard LAN controller 2 is enabled or disabled.	

[ ]: Factory-set

Peripheral Configuration

The screen shown below appears if you select "Peripheral Configuration" on the Advanced menu. If you select a menu item preceded by symbol ➤ and press **Enter**, the appropriate submenu appears.



See the table below for the items.

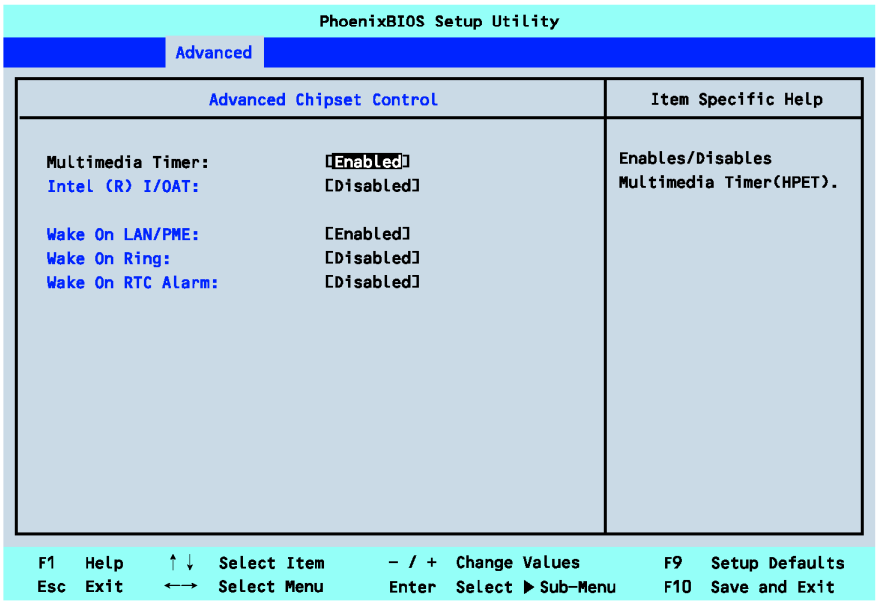
IMPORTANT: Note that the interrupt and/or base I/O address does not conflict with others. If the value set for the interrupt or base I/O address is used in another resource, the yellow asterisk (*) appears. Reassign any item with the yellow asterisk properly.

Option	Parameter	Description	Your Setting
Serial Port A	Disabled [Enabled]	Selects whether serial port A is enabled or disabled.	
Base I/O address	[3F8] 2F8 3E8 2E8	Selects the base I/O address for serial port A.	
Interrupt	IRQ 3 [IRQ 4]	Selects the interrupt for a serial port A.	
Serial Port B	Disabled [Enabled]	Selects whether serial port B is enabled or disabled (display only).	
Base I/O address	3F8 [2F8] 3E8 2E8	Selects the base I/O address for serial port B.	
Interrupt	[IRQ 3] IRQ 4	Selects the interrupt for a serial port B.	
USB 2.0 Controller	Disabled [Enabled]	Selects whether the USB 2.0 device is enabled or disabled.	
Parallel ATA	Disabled [Enabled]	Selects whether the parallel ATA is enabled or disabled.	

[ ]: Factory-set

Advanced Chipset Control

The following screen appears if you select "Advanced Chipset Control" on the Advanced menu.


PhoenixBIOS Setup Utility
Advanced
Advanced Chipset Control
Item Specific Help
Multimedia Timer: [Enabled]
Intel (R) I/OAT: [Disabled]
Wake On LAN/PME: [Enabled]
Wake On Ring: [Disabled]
Wake On RTC Alarm: [Disabled]
Enables/Disables Multimedia Timer(HPET).
F1 Help ↑↓ Select Item - / + Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

See the table below for the items.

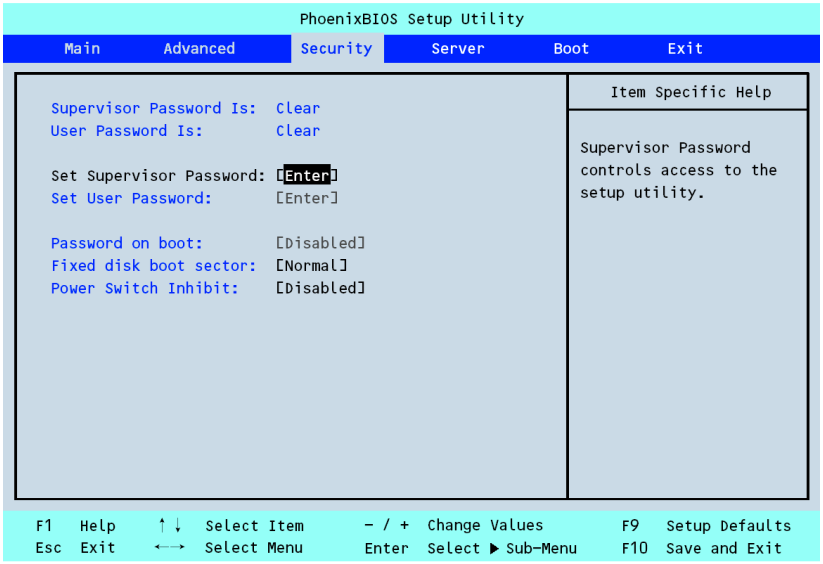
Option	Parameter	Description	Your Setting
Multimedia Timer	Disabled [Enabled]	Specify whether the timer corresponding to multimedia is enabled or disabled.	
Intel (R) I/OAT	[Disabled] Enabled	Specify whether the Intel(R) I/O Acceleration Technology feature is enabled or disabled.	
Wake On LAN/PME	Disabled [Enabled]	Specify whether the remote power-on function through a network is enabled or disabled.	
Wake On Ring	[Disabled] Enabled	Specify whether the remote power-on function through a serial port is enabled or disabled.	
Wake On RTC Alarm	[Disabled] Enabled	Specify whether the scheduling power-on function by using RTC alarm feature is enabled or disabled.	

[ ]: Factory-set

IMPORTANT: If supplying AC power to the server is stopped, the remote power-on function (Wake On LAN/PME and Wake On Ring) is disabled at the next boot. Press the POWER switch to restart the system. The Wake On LAN/PME and Wake On Ring functions are enabled when the DC power is supplied to the server at the next time.

Security

The Security menu appears if you move the cursor to the position of "Security."


PhoenixBIOS Setup Utility
Main
Advanced
Security
Server
Boot
Exit
Item Specific Help
Supervisor Password Is: Clear
User Password Is: Clear
Set Supervisor Password: [Enter]
Set User Password: [Enter]
Password on boot: [Disabled]
Fixed disk boot sector: [Normal]
Power Switch Inhibit: [Disabled]
Supervisor Password controls access to the setup utility.
F1 Help ↑ ↓ Select Item - / + Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

Press **Enter** on "Set Supervisor Password" or "Set User Password" to display the dialog to set/change password.

IMPORTANT:

- User password can be set only when Supervisor password is already set.
- Set the passwords only after OS is installed.
- If you forget the passwords, contact your service representative.

See the table below for the items.

Option	Parameter	Description	Your Setting
Supervisor Password Is	Clear Set	Indicates the password setting status.	
User Password Is	Clear Set	Indicates the password setting status.	
Set Supervisor Password	Up to eight alphanumerics	Press **Enter** to display the supervisor password entry screen. This password enables all the SETUP menus to be accessed. This setting can be done only on login with the password input of "Supervisor" at start of SETUP.	
Set User Password*	Up to eight alphanumerics	Press **Enter** to display the user password input screen. For this password, accessing to the SETUP menu is restricted.	
Password on boot*	[Disabled] Enabled	Specify whether the passwords are entered or not on booting. At first the supervisor password must be set. If the supervisor password is set and this option is disabled, BIOS determines that a user is booting.	
Fixed disk boot sector	[Normal] Write Protect	Specify whether to permit writing into boot sector of the hard disk drive or not.	
Power Switch Inhibit	[Disabled] Enabled	Specify whether to enable or disable the power switch feature.	

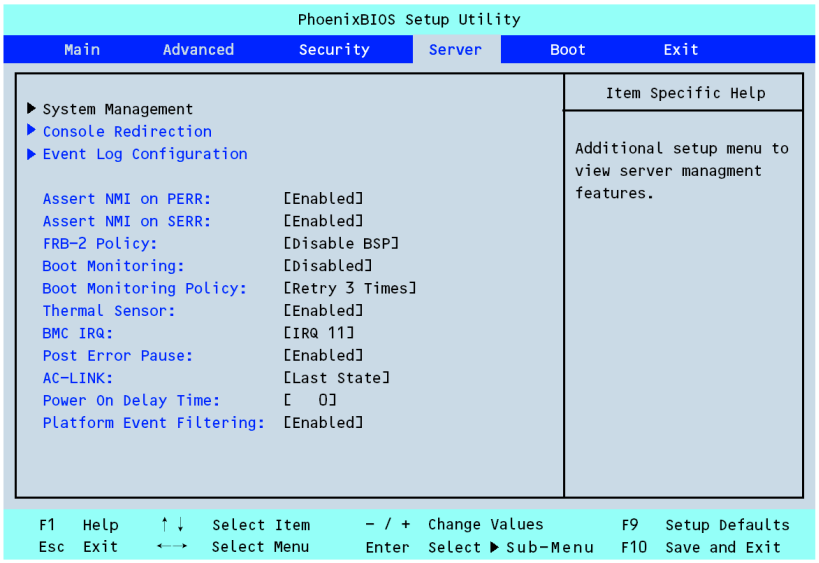
[ ]: Factory-set

* You can set this item on [Set Supervisor Password] menu.

Server

The Server menu appears if you move the cursor to "Server."

If you select a menu item preceded by symbol ➤ and press **Enter**, the appropriate submenu appears.


PhoenixBIOS Setup Utility
Main Advanced Security Server Boot Exit
▶ System Management
▶ Console Redirection
▶ Event Log Configuration
Assert NMI on PERR: [Enabled]
Assert NMI on SERR: [Enabled]
FRB-2 Policy: [Disable BSP]
Boot Monitoring: [Disabled]
Boot Monitoring Policy: [Retry 3 Times]
Thermal Sensor: [Enabled]
BMC IRQ: [IRQ 11]
Post Error Pause: [Enabled]
AC-LINK: [Last State]
Power On Delay Time: [0]
Platform Event Filtering: [Enabled]
Item Specific Help
Additional setup menu to view server managment features.
F1 Help ↑↓ Select Item - / + Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

See the table below for the items.

Option	Parameter	Description	Your Setting
System Management	–	Displays submenu.	
Console Redirection	–	Displays submenu.	
Event Log Configuration	–	Displays submenu.	
Assert NMI on SERR	Disabled [Enabled]	Indicates whether PCI SERR is supported or not.	
Assert NMI on PERR	Disabled [Enabled]	Indicates whether PCI PERR is supported or not.	
FRB-2 Policy	Disable FRB2 Timer [Disable BSP] Do Not Disable BSP Retry 3 Times	Set the FRB level 2 timer.	
Boot Monitoring	[Disabled] Every 5 minutes between 5 minutes and 60 minutes	Specify whether to enable or disable the boot monitoring function on booting, or select the time limit for timeout. To use this function, install NEC ESMPRO Agent. Set this item to "Disabled" if the system is booted from OS without installation of NEC ESMPRO Agent.	

Option	Parameter	Description	Your Setting
Boot Monitoring Policy	[Retry 3 Times] Retry Service Boot Always Reset	Specify the processing at the occurrence of timeout during boot monitoring. If [Retry 3 times] is selected, the system is reset after the occurrence of timeout and OS boot is retried up to three times. If [Retry Service Boot] is selected, the system is reset after the occurrence of timeout and OS boot is retried up to three times. Then the boot is tried from the service partition for three times. The failure in the third boot causes the system to stop booting. If [Always Reset] is selected, the system is reset after the occurrence of timeout and OS boot is retried repeatedly. * If no service partition exists in the system, OS boot is retried repeatedly from the system partition.	
Thermal Sensor	Disabled [Enabled]	Specify whether to enable or disable the thermal sensor monitoring function. If a thermal error is detected with this item being set to "Enabled", the system stops at the end of POST.	
BMC IRQ	Disabled [IRQ 11]	Set the IRQ for BMC.	
Post Error Pause	Disabled [Enabled]	Indicates whether POST is aborted once at the end of POST if an error occurs during the execution of POST.	
AC-LINK	Stay Off [Last State] Power On	Specify the state of power when the AC power to the server is turned off once and then on. (See the table below.)	
Power on Delay Time	[0] - 255	Specify the DC power on delay time within the range between 0 and 255 seconds. The time specified is valid when "Power On" or "Last State" is specified for AC LINK.	
Platform Event Filtering	Disabled [Enabled]	This item becomes meaningless when the notification feature of EXPRESSSCOPE Engine is enabled.	

[ ]: Factory-set

The table below shows the operation when the AC power to the server is turn off once and then on again, depending on the setting of "AC LINK."

System status before AC power off	Setting of AC LINK		
	Stay Off	Last State	Power On
Operating	Off	On	On
Aborting (DC power being off also)	Off	Off	On
Forced shutdown	Off	Off	On

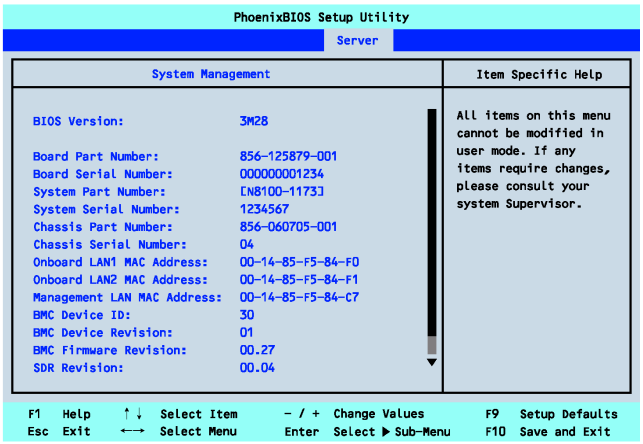
* Press the power switch continuously for four seconds or longer. This forcibly turns off the power.

IMPORTANT:

- To power on the server from the UPS (Uninterruptible Power Supply), select [Server] - [AC Link] - [Power On].
- If the server is connected to the UPS, set at least 10 seconds delay in the power-on schedule.

System Management

The following screen appears if you select "System Management" on the Server menu and press **Enter**.


PhoenixBIOS Setup Utility
Server
System Management
Item Specific Help
BIOS Version: 3M28
Board Part Number: 856-125879-001
Board Serial Number: 000000001234
System Part Number: [N8100-1173]
System Serial Number: 1234567
Chassis Part Number: 856-060705-001
Chassis Serial Number: 04
Onboard LAN1 MAC Address: 00-14-85-F5-84-F0
Onboard LAN2 MAC Address: 00-14-85-F5-84-F1
Management LAN MAC Address: 00-14-85-F5-84-C7
BMC Device ID: 30
BMC Device Revision: 01
BMC Firmware Revision: 00.27
SDR Revision: 00.04
All items on this menu cannot be modified in user mode. If any items require changes, please consult your system Supervisor.
F1 Help ↑↓ Select Item - / + Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

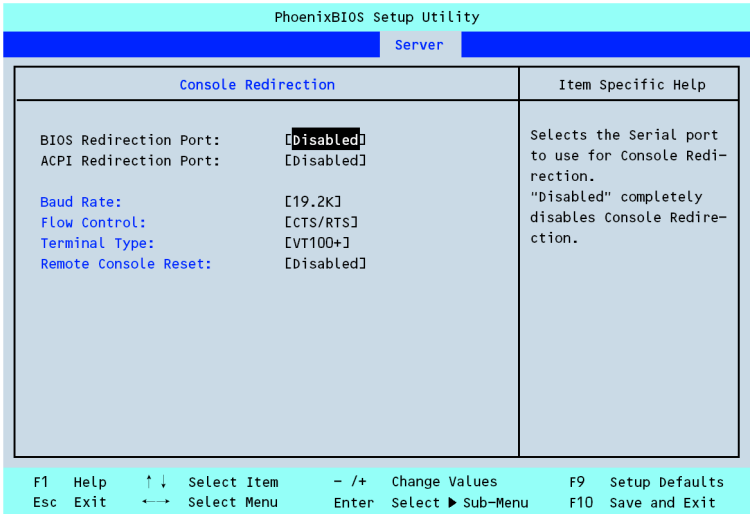
See the table below for the items.

Option	Parameter	Description	Your Setting
BIOS Version	–	Displays the current BIOS version. (View only)	
Board Part Number	–	Displays the mother board part number. (View only)	
Board Serial Number	–	Displays the mother board serial number. (View only)	
System Part Number	–	Displays the system code number. (View only)	
System Serial Number	–	Displays the System serial number. (View only)	
Chassis Part Number	–	Displays the chassis part number. (View only)	
Chassis Serial Number	–	Displays the chassis serial number. (View only)	
Onboard LAN1 MAC Address	–	Displays the MAC address of onboard network controller 1. (View only)	
Onboard LAN2 MAC Address	–	Displays the MAC address of onboard network controller 2. (View only)	
Management LAN MAC Address	–	Displays the MAC address of management network controller 2. (View only)	
BMC Device ID	–	Displays the device ID of BMC (Baseboard Management Controller). (View only)	
BMC Device Revision	–	Displays the revision of BMC (Baseboard Management Controller) device. (View only)	
BMC Firmware Revision	–	Displays the revision of BMC (Baseboard Management Controller) firmware. (View only)	
SDR Revision	–	Displays the revision of SDR (Sensor Data Record). (View only)	
PIA Revision	-	Displays the revision of PIA (Platform Information Area). (View only)	

[ ]: Factory-set

Console Redirection

The following screen appears if you select "Console Redirection" on the Server menu and press **Enter**.


PhoenixBIOS Setup Utility
Server
Console Redirection
Item Specific Help
BIOS Redirection Port: [Disabled]
ACPI Redirection Port: [Disabled]
Baud Rate: [19.2K]
Flow Control: [CTS/RTS]
Terminal Type: [VT100+]
Remote Console Reset: [Disabled]
Selects the Serial port to use for Console Redirection.
"Disabled" completely disables Console Redirection.
F1 Help ↑ ↓ Select Item - /+ Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

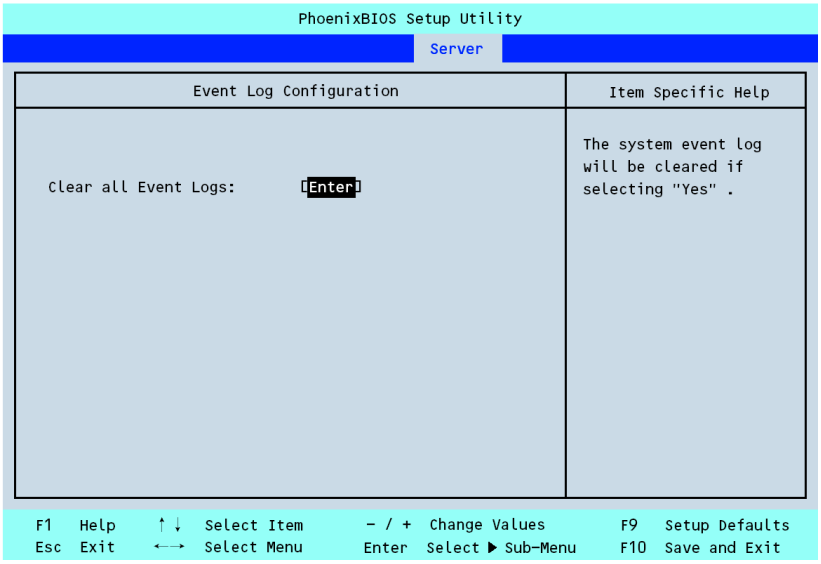
See the table below for the items.

Option	Parameter	Description	Your Setting
BIOS Redirection Port	[Disabled] Serial Port A Serial Port B	Specify the serial port to which a remote console is connected.	
ACPI Redirection Port	[Disabled] Serial Port A Serial Port B	Specify the serial port to which an ACPI console is connected.	
Baud Rate	9600 [19.2k] 38.4k 57.6k 115.2k	Specify the baud rate used for the interface with successive remote consoles.	
Flow Control	None XON/XOFF [CTS/RTS] CTS/RTS+CD	Specify the flow control method.	
Terminal Type	PC ANSI [VT100+] VT-UTF8	Specify the type of remote console.	
Remote Console Reset	[Disabled] Enabled	Specify whether to enable or disable the reset command issued from remote console.	

[ ]: Factory-set

Event Log Configuration

The following screen appears if you select "Event Log Configuration" on the Server menu and press **Enter**.


PhoenixBIOS Setup Utility
Server
Event Log Configuration
Item Specific Help
Clear all Event Logs: [Enter]
The system event log will be cleared if selecting "Yes" .
F1 Help ↑ ↓ Select Item - / + Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

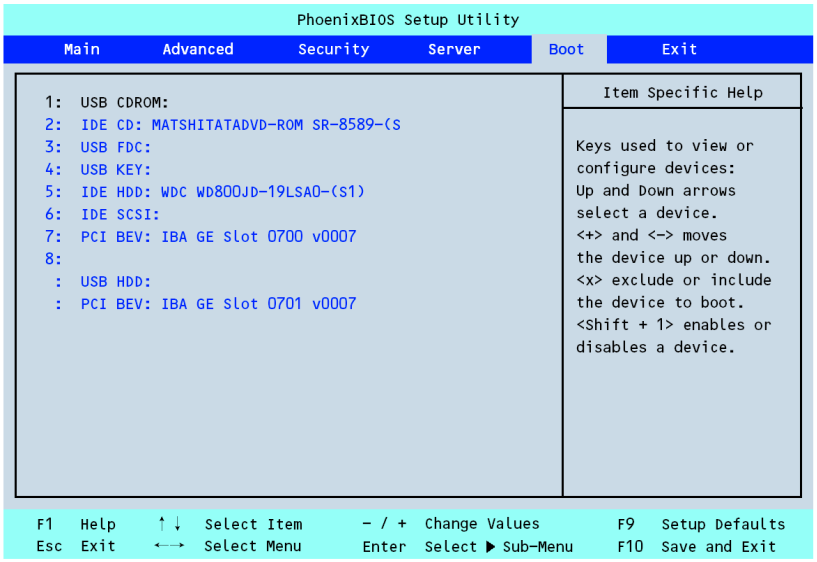
See the table below for the items.

Option	Parameter	Description	Your Setting
Clear all Event Logs	Enter	Press **Enter** and select "Yes" on the confirmation screen to clear the system event log.	

[ ]: Factory-set

Boot

If you move the cursor to the position of "Boot," the Boot menu appears, which is used to set the boot priority.


PhoenixBIOS Setup Utility
Main
Advanced
Security
Server
Boot
Exit
1: USB CDROM:
2: IDE CD: MATSHITATADVD-ROM SR-8589-(S
3: USB FDC:
4: USB KEY:
5: IDE HDD: WDC WD800JD-19LSA0-(S1)
6: IDE SCSI:
7: PCI BEV: IBA GE Slot 0700 v0007
8:
: USB HDD:
: PCI BEV: IBA GE Slot 0701 v0007
Item Specific Help
Keys used to view or configure devices:
Up and Down arrows select a device.
<+> and <-> moves the device up or down.
<x> exclude or include the device to boot.
<Shift + 1> enables or disables a device.
F1 Help ↑ ↓ Select Item - / + Change Values F9 Setup Defaults
Esc Exit ←→ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

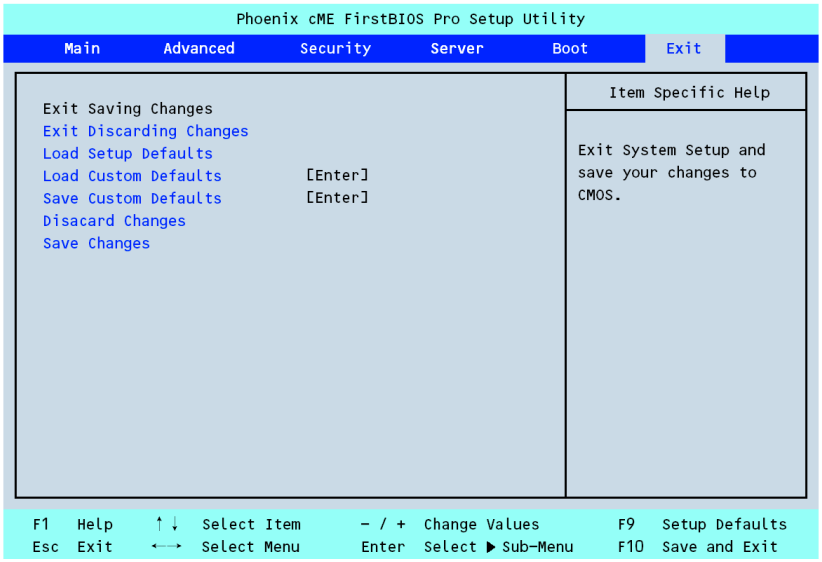
The server searches for devices in the order set in this menu on booting. Finding the boot software, the server starts the software.

The priority of the boot devices can be changed by using the ↑, ↓, **+**, and **-** keys. Move the cursor to the desired device with the ↑ or ↓ key and change the priority with the **+** or **-** key.

IMPORTANT: To boot NEC EXPRESSBUILDER, set the priority of the devices as shown in the figure above.

Exit

The Exit menu appears if you move the cursor to "Exit."



The options on the menu are described below.

Exit Saving Changes

Select this item to terminate SETUP after saving the newly selected information in CMOS (nonvolatile memory). Selecting "Exit Saving Changes" causes the confirmation screen to appear. If you select "Yes," SETUP is terminated with the newly selected information saved in CMOS (nonvolatile memory). Then the server automatically reboots the system.

Exit Discarding Changes

Select this item to terminate SETUP without saving the newly selected information in CMOS (nonvolatile memory). Selecting "No" allows SETUP to be terminated without storage of the modified information. Then the server automatically reboots the system. Selecting "Yes" allows SETUP to be terminated with storage of the modified information. Then the server automatically reboots the system.

Load Setup Defaults

Select this item to return all the values of SETUP to the default values. Selecting "Load Setup Defaults" causes the confirmation screen to appear. Select "Yes" to return the values to the default values. Select "No" to return to the Exit menu screen.

Load Custom Defaults

Select this item and press **Enter** to load the custom defaults stored.

Save Custom Defaults

Select this item and press **Enter** to save the parameters currently being edited as custom defaults. When the parameters are saved, the Load Custom Defaults menu appears.

Discard Changes

Select this item to return the values modified currently to the previous values before saving the values to CMOS.

Save Changes

Select this item to save the newly selected information to CMOS (non-volatile memory) without the termination of SETUP.

RAID CONFIGURATION

This section describes how to configure the internal hard disk drives as the disk array drive by using the onboard RAID controller. Refer to the manual of the optional disk array controller for how to configure the hard disk drives by using the optional disk array controller.

To use the hard disk drives installed in the disk expansion unit in a disk array, the optional disk array controller is necessary. Refer to the manual of the optional disk array controller or disk expansion unit for details.

Onboard RAID Features

You can configure a disk array (RAID0, RAID1, or RAID10) by using the onboard RAID controller of the server.

- RAID0 (striping)

  Stores data on two, three, or four hard disk drives by dividing it (striping). All the hard disk drives can be accessed at the same time. This improves disk access performance compared with using a single hard disk drive.

  IMPORTANT:
  - RAID0 does not have data redundancy. When a hard disk drive failure occurs, data cannot be restored.
  - Logical capacity of the array becomes a multiple of the connected hard disk drive.

- RAID1 (mirroring)

  Stores the data being saved to one hard disk dive to another hard disk drive. This method is called "mirroring." When storing data onto one hard disk drive, the same data is simultaneously stored onto another hard disk drive. When a hard disk drive becomes faulty, the one with the same data can be used. This provides operation without the system going down.

  IMPORTANT:
  - RAID1 reads or writes data to/from the several hard disk drives at the same time. The disk access performance is lower than the single disk.
  - Logical capacity of the array is equal to one hard disk drive connected.

- RAID10 (spanning of RAID1)

  RAID10 is a RAID level combined with RAID0 and RAID1.

  Stores data on hard disk drives by dividing it (striping). Then, each striped data is written onto hard disk drives in mirroring mode. Owing to this feature, high disk access performance of RAID0 and, in addition, high reliability of RAID1 can be achieved.

  IMPORTANT: Logical capacity of the array is equal to one hard disk drive connected.

Installing the Hard Disk Drives

Install the two or more SAS hard disk drives to your server. See Chapter 9 for detail.

IMPORTANT: Use two hard disk drives of the same revolution. In addition, use two hard disk drives of the same capacity if you are going to configure RAID1.

Enabling RAID Feature

To configure a hard disk drive as RAID drive, change setting of RAID configuration jumper switch on mother board.

NOTE: The factory-set value is to use the hard disk drive as a single disk drive.

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

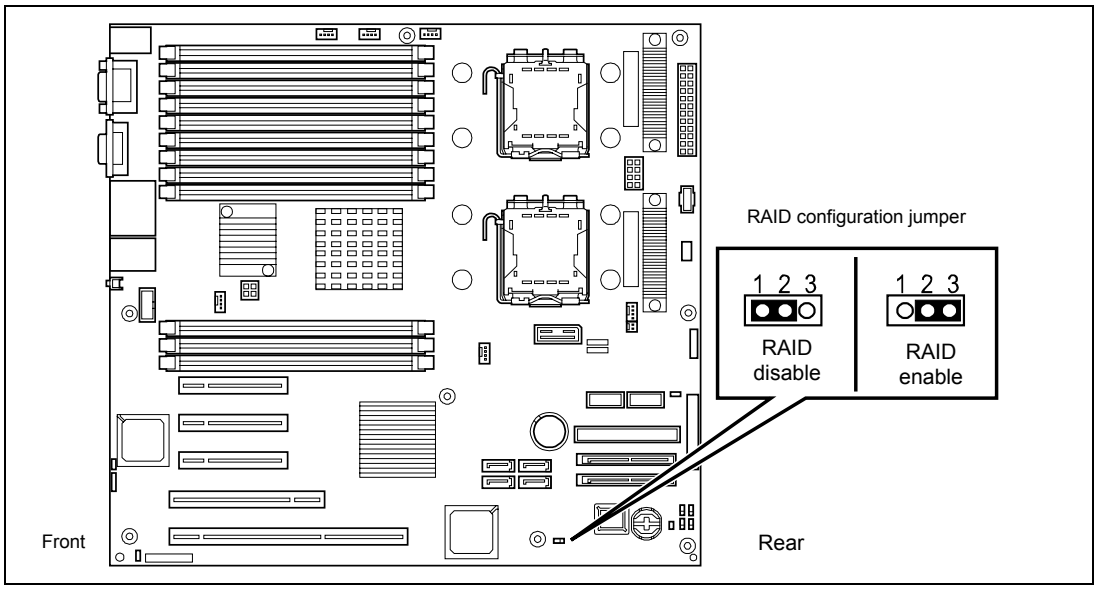
- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Make sure to complete board installation.
- Do not install the server on a rack with leaving covers removed.
- Do not pinch your finger with mechanical components.
- Note high temperature.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.

1. See the section "Preparing for Installation and Removal" as described in Chapter 9 of this guide to prepare.
2. Remove the side cover (see Chapter 9).
3. Locate the position of the RAID configuration jumper on the mother board as shown below.

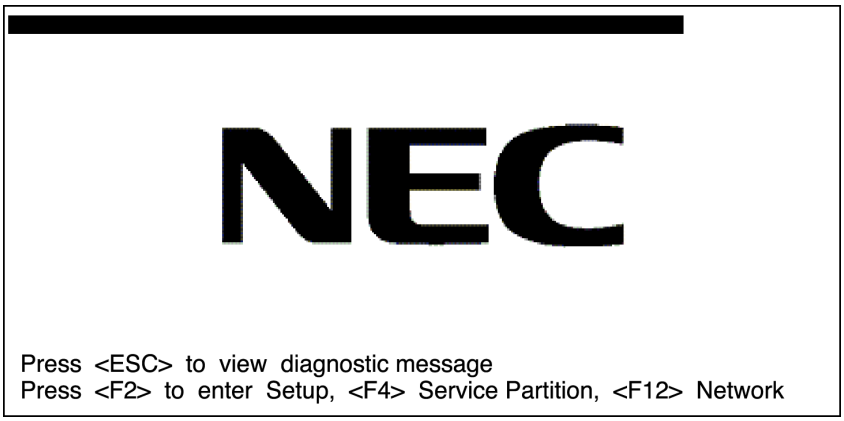


4. Remove the jumper from position 1 – 2 on jumper block.
5. Reinstall the jumper on position 2 – 3 on jumper block.
6. Reinstall the server removed in Step 2.
7. Plug the power cord to your server and turn on the server.

Running LSI Logic Software RAID Setup Utility

1. When the following screen appears after you have powered on the server, press **Esc**.

   The POST screen appears.



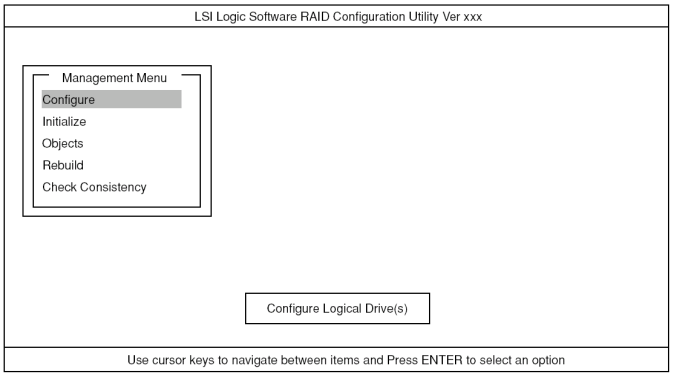
2. Check the description as shown below on the POST screen, then press **Ctrl** + **M**.

   LSI Logic Software RAID Setup Utility starts.

```
LSI Logic SoftwareRAID BIOS Version xxxxxx
LSI Logic MPT RAID Found at PCI Bas No:xx Dev No:xx
Scaning for port 00 Responding xxxxxxxx xxxxMB
Standard FW xxx DRAM=128MB(SDRAM)
xx Logical drive(s) Configured
Press <Ctrl><M> to Run LSI Logic Software RAID Setup Utility
```

NOTE: Press **Ctrl** + **M** to start the LSI Logic Software RAID Setup Utility.

LSI Logic Software RAID Configuration Utility TOP Menu (Management Menu)



Exiting from LSI Logic Software RAID Setup Utility

Press **Esc** in the TOP menu of LSI Logic Software RAID Setup Utility.

When a confirmation message appears, select [Yes].

Please Press Ctrl-Alt-Del to REBOOT the system.

When the above message appears, press **Ctrl** + **Alt** + **Delete**.

The server is rebooted.

Menu Tree

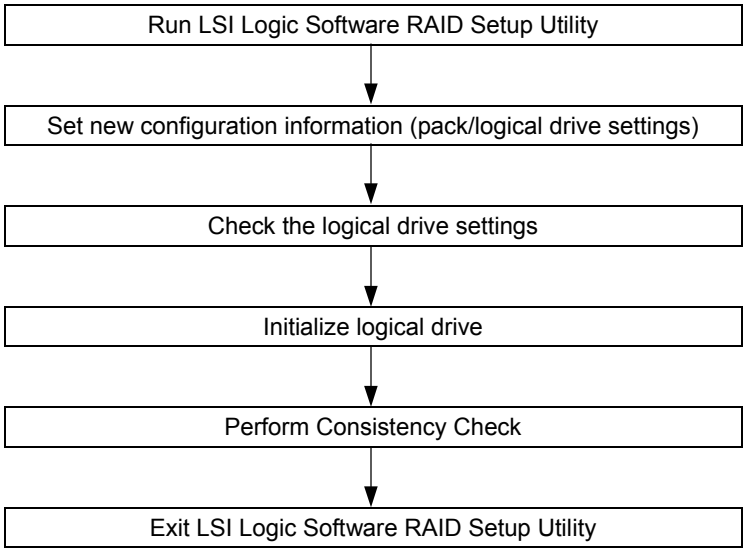
Setting list

+: Selection/execution parameter ✶: Setting parameter. •: Information display
>: Can be set (modified) after creation of logical drive

Menu	Description
+Configure	Performs Configuration settings
+Easy Configuration	Set configuration (Using fixed value)
+New Configuration	Set new configuration
+View/Add Configuration	Additional setting / viewing configuration
+Clear Configuration	Clear configuration
+Select Boot Drive	Chose Bootable Logical Drive
+Initialize	Initialize logical drive
+Objects	Various settings
+Adapter	Set disk array controller
+Sel. Adapter	Clear configuration
✶Rebuild Rate	30
✶Chk Const Rate	30
✶FGI Rate	30
✶BGI Rate	30
✶Disk WC	WT
✶Read Ahead	On
✶Bios State	Enable
✶Stop on Error	No
✶Fast Init	Enable
✶Auto Rebuild	On
✶Auto Resume	Enable
✶Disk Coercion	1GB
✶Factory Default	
+Logical Drive	Logical drive operation
+Logical Drives	Select logical drive (when multiple logical drives exist)
+Initialize	Initialize logical drive
+Check Consistency	Check logical drive redundancy
+View/Update Parameters	Display logical drive information
• RAID	Display RAID level
• SIZE	Display logical drive capacity
• Stripe SIZE	Display stripe size
• #Stripes	Display the number of hard disk drives in logical drive
• State	Display logical drive status
• Spans	
• Disk WC	Off: Write through On: Write back
• Read Ahead	
+Physical Drive	Physical drive operation
+Physical Drive Selection Menu	Select physical drive
+Make HotSpare	Set as hot-spare disk for auto rebuilding
+Force Online	Make a disk online
+Force Offline	Make a disk offline
+Drive Properties	Display hard disk drive information
• Device Type	Hard disk drive type
• Capacity	Hard disk drive capacity
• Product ID	Hard disk drive model
• Revision No.	Hard disk drive revision
+Rebuild	Perform rebuilding
+Check Consistency	Perform logical drive redundancy check

Operating Procedures for Setup Utility

Creating/Adding Configuration


Run LSI Logic Software RAID Setup Utility
Set new configuration information (pack/logical drive settings)
Check the logical drive settings
Initialize logical drive
Perform Consistency Check
Exit LSI Logic Software RAID Setup Utility

1. Run LSI Logic Software RAID Setup Utility.
2. Select "Configure" → "New Configuration" from the TOP menu (Management Menu).

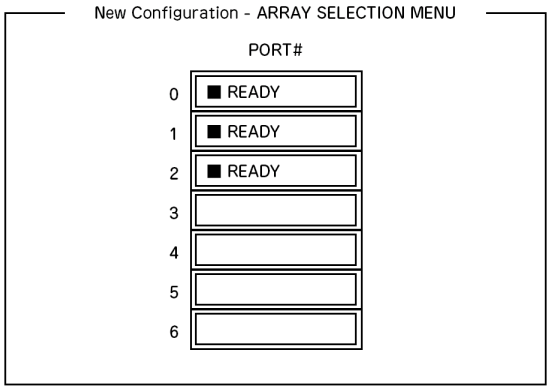
   Select "View/add Configuration" to add configuration.

IMPORTANT:

- Creating a configuration using "New Configuration" menu clears the existing configuration information. To add configuration information to the existing configuration, select "View/Add Configuration."
- You cannot create Spanning of RAID1 and RAID5, or set the logical drive capacity on "Easy Configuration" menu. Use "New Configuration" or "View/Add Configuration" instead.

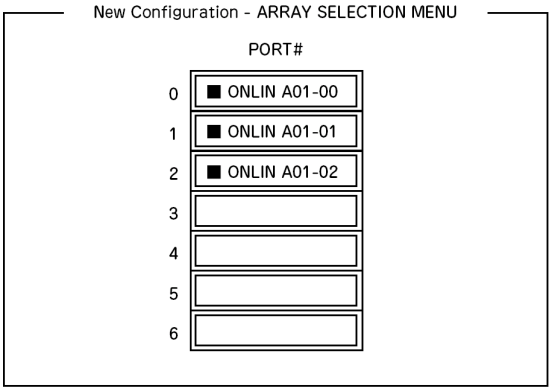
3. When a confirmation message (Proceed?) is displayed, select "Yes."

The SCAN DEVICE starts (scanning information is displayed at the bottom of the screen). Upon completion of SCAN DEVICE, the "New Configuration - ARRAY SELECTION MENU" screen appears.



4. Move the cursor onto the hard disk drive to be packed by using cursor key and then press **Space** to select the hard disk drive.

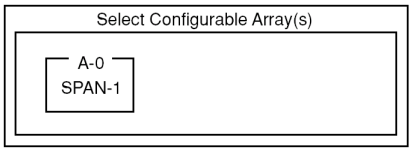
The display for the selected hard disk drive changes from READY to ONLINE.



5. Press **F10** to set "Select Configurable Array(s)".

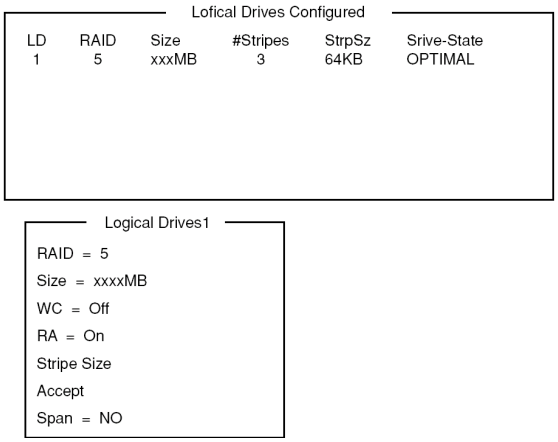
6. Press **Enter**.

SPAN-1 is set.



7. Press **F10** to create logical drive.

The "Logical Drives Configure" screen appears. (The figure below shows an example of RAID5 configured with three hard disk drives.)



8. Select "RAID," "Size", "WC", "RA", "Stripe Size", or "Span" by using cursor keys. Then press **Enter** to fix the selection and set each value.

(1) "RAID": Sets RAID level.

Parameter	**Remarks**
0	RAID0
1	RAID1
5	RAID5
10	Spanning of RAID1

The selectable RAID level varies depending on the number of hard disk drives that configure a pack.

(2) "Size": Sets logical drive size.

Up to 40 logical drives can be created per disk array controller.

(3) "WC": Sets parameter for Change Write Cache.

Parameter	Remarks
Off	–
On	–

(4) "RA": Sets parameter for Change Write Cache.

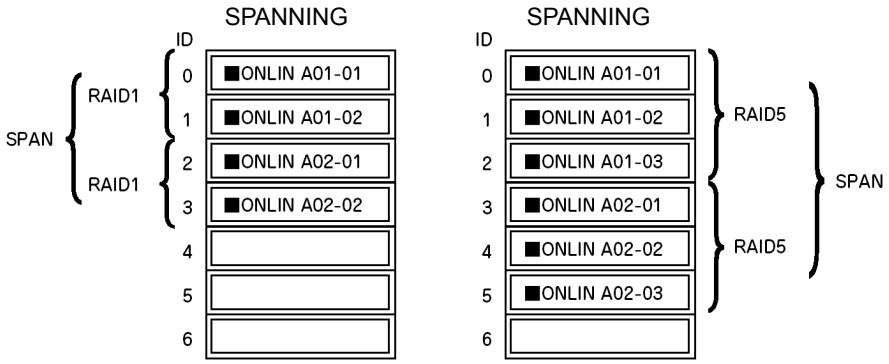
Parameter	Remarks
Off	–
On	–

(5) "StripeSize": Sets stripe size.

(6) "Span: Sets Span.

Parameter	Remarks
SPAN=YES	–
SPAN=YES	–

When performing SPAN, create two or more sets of the same pack at pack creation, as shown in the figure below.



9. When all settings are completed, select "Accept" and then press **Enter** to create logical drive.

The created logical drive is displayed in the "Logical Drive Configured" screen.

10. After creating logical drive, press **Esc** to close the screen.

Go back to the "Save Configuration?" screen and then select "Yes" to save the configuration.

11. When the confirmation message shows that the configuration has been saved, press **Esc** to return to the TOP menu screen.

12. On the TOP menu screen, select "Objects" → "Logical Drive" → "View/Update Parameters" to check logical drive information.

13. Select "Initialize" in the TOP menu screen.

14. When the "Logical Drives" screen appears, move the cursor to the logical drive to be initialized, and press **Space**.

The logical drive is selected.

15. After selecting logical drive, press **F10** to start initialization.

A confirmation screen for execution appears. Select "Yes" to start initialization.

When the progress bar in the "Initialize Logical Drive Progress" screen indicates 100%, initialization is completed.

16. Execute Check Consistency on the logical drive that has been initialized.

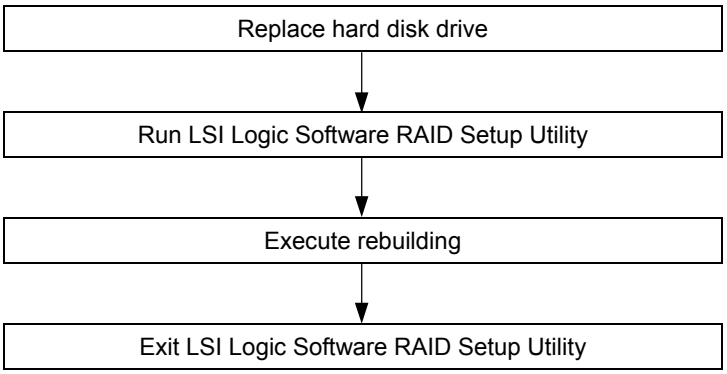
See "Check Consistency" for details.

17. Press **Esc** to return to the TOP menu and exit from LSI Logic Software RAID Setup Utility.

IMPORTANT:

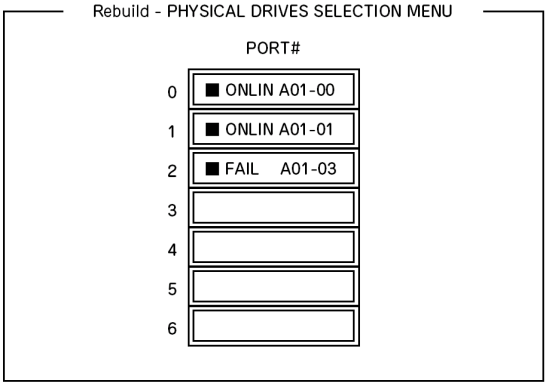
- Be sure to execute Check Consistency after creating configuration.
- Check Consistency has two modes: "check and recover" and "check only".

Manual Rebuild


Replace hard disk drive
Run LSI Logic Software RAID Setup Utility
Execute rebuilding
Exit LSI Logic Software RAID Setup Utility

1. Replace a hard disk drive and turn on the server.
2. Run LSI Logic Software RAID Setup Utility.
3. Select "Rebuild" from the TOP menu.

   The "Rebuild – PHYSICAL DRIVES SELECTION MENU" screen appears.



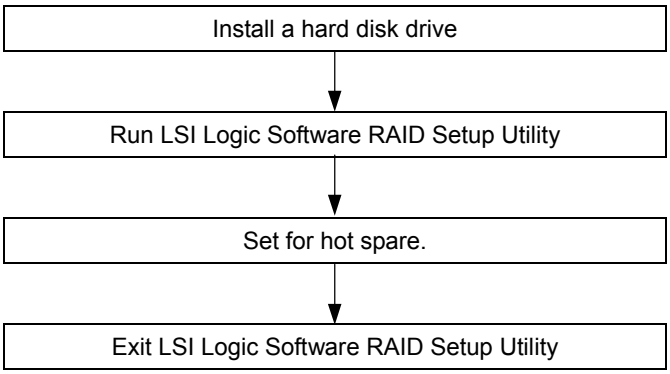
4. Move the cursor onto the hard disk drive displaying "FAIL," and then press **Space** to select it.

   Multiple hard disk drives can be selected (simultaneous rebuilding.)
5. The "FAIL" indication for the hard disk drive selected starts blinking.
6. When hard disk drive has been selected, press **F10** to start rebuilding.
7. When confirmation screen for execution appears. Select "Yes".

   The rebuild process starts.

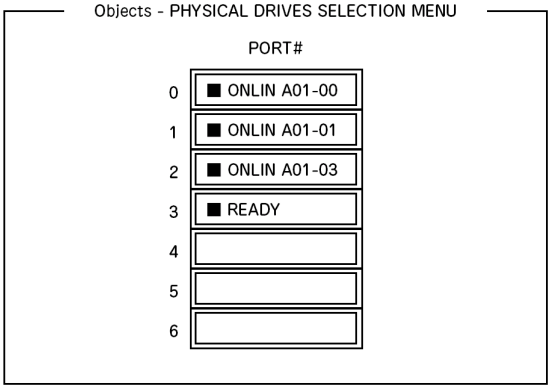
   When the progress bar in the "Rebuild Physical Drives in Progress" screen indicates 100%, rebuilding is completed.
8. Press **Esc** to return to the TOP menu and exit LSI Logic Software RAID Setup Utility.

Setting Hot Spare


Install a hard disk drive
Run LSI Logic Software RAID Setup Utility
Set for hot spare.
Exit LSI Logic Software RAID Setup Utility

1. Install a hard disk drive to be used as hot spare, and then turn on the server.
2. Run LSI Logic Software RAID Setup Utility.
3. Select "Objects" → "Physical Drive" from the TOP menu.

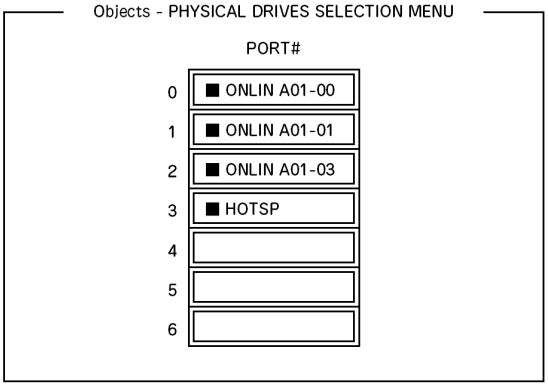
   The "Objects - PHYSICAL DRIVE SELECTION MENU" screen appears.



4. Move the cursor onto the hard disk drive to be used as hot spare and press **Enter**.
5. The "Channel X, Target X" screen appears. Select "Make HotSpare."
6. A confirmation screen appears. Select "Yes."

   The hard disk drive indication is changed to "HOTSP."

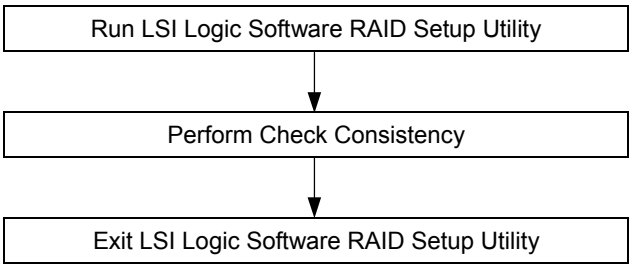
7. Press **Esc** to return to the TOP menu and exit LSI Logic Software RAID Setup Utility.



IMPORTANT:

- Select "Objects" → "Physical Drive" to cancel the hot spare setting.
- When two or more hard disk drives (of the same capacity) are assigned as hot spare, rebuilding is performed in order starting from the one with the smaller CH number/ID number.

Check Consistency



1. Run LSI Logic Software RAID Setup Utility.
2. Select "Check Consistency" from the TOP menu.

   The "Logical Drives" screen appears.
3. Move the cursor onto the logical drive to be checked, and press **Space** to select it.
4. When logical drive has been selected, press **F10** to start consistency check.
5. A confirmation screen for execution appears. Select "Yes".

   The consistency check starts.

   When the progress bar in the "Check Consistency Progress" screen indicates 100%, the consistency check is completed.
6. Press **Esc** to return to the TOP menu and exit LSI Logic Software RAID Setup Utility.

IMPORTANT:

- Be sure to execute Check Consistency after creating configuration.
- Check Consistency has two modes: "check and recover" and "check only".

Others

1. Clear Configuration

   Clears configuration information. Select "Configure" → "Clear Configuration" from the TOP menu. Executing "Clear Configuration" clears all configuration information on the disk array controller and hard disk drives. The configuration information on all channels of the disk array controller is also cleared.

   NOTES:

   - When configuration information on the disk array controller and that on the hard disk drive do not match (excluding at replacement of faulty disk array controller), configuration mail fail if you select the configuration information on the disk array controller. In this case, execute "Clear Configuration" to create configuration again.
   - LSI Logic Software RAID Setup Utility cannot delete each logical drive. Use Power Console Plus instead.

2. Force Online

   Puts a hard disk drive being in the FAIL status online.

   Select "Objects" → "Physical Drive" → (select hard disk drive) → "Force Online" from the TOP menu.

3. Rebuild Rate

   Sets the Rebuild Rate.

   Select "Objects" → "Adapter" → "Rebuild Rate" from the TOP menu.

   Available value is between 0% and 100%. Default value (recommended) is 30%.

4. Hard disk drive information

   Checks hard disk drive information.

   Select "Objects" → "Physical Drive" → (select hard disk drive) → "View Drive Information" from the TOP menu.

ADD-IN CARD'S BIOS

Refer to the documentation coming with the optional add-in card for details.

When the server has multiple optional PCI boards installed, the server first displays the start-up message of the BIOS SETUP Utility of the mother board. It then displays the utility start-up message for optional PCI boards one by one. The start-up message appears for the optional PCI board in the PCI #1 slot first, then PCI #2, PCI #3, PCI #4, and finally PCI #5. The message displayed may vary depending on the optional PCI board. Refer to the manual that comes with the optional PCI board for details.

CONFIGURING MOTHER BOARD JUMPERS

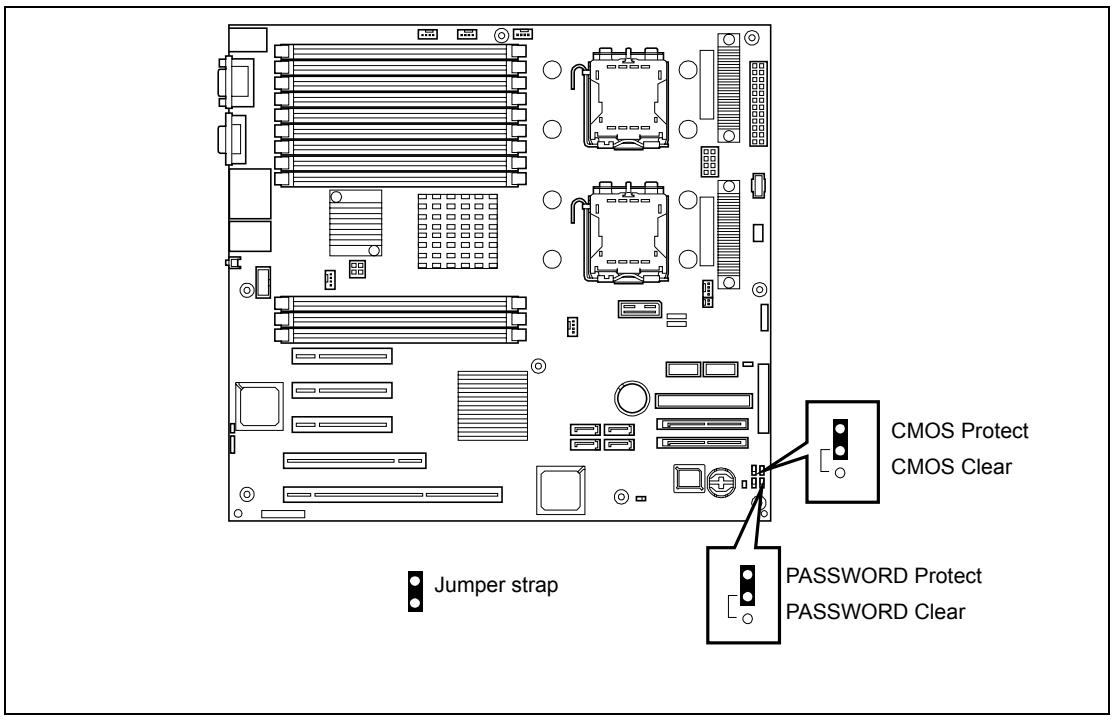
With the pre-installed SETUP utility, you can set desired passwords to protect the data stored in the server against access from unauthorized users. When you forget the passwords, however, you may want clear them. The following describes how to clear these passwords. You can also use the following procedure to clear the CMOS data in the server.

IMPORTANT:

- Clearing the CMOS data resumes the factory-set configuration data.
- After clearing CMOS, you must run the BIOS SETUP utility and execute the following menus to reconfigure your mother board.
  – Load Setup Defaults in the Exit menu
  – Memory Retest of Memory Configuration in the Advanced menu
  – Processor Retest of Processor Settings in the Main menu

To clear passwords or the CMOS data, use the jumper switch on the mother board of the server. The following figure illustrates the jumper switch location.

IMPORTANT: Do not change any other switch settings. Any change may cause the server to fail or malfunction.



The following describe the clearing procedure.

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery.
- Do not connect the ground line to a gas pipe.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Never attempt to lift the server with two or less persons.
- Make sure to complete board installation.
- Do not install the server on a rack with leaving covers removed.
- Do not pinch your finger with mechanical components.
- Note high temperature.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.

Clearing CMOS Data

1. See the section "Preparing for Installation and Removal" as described in Chapter 9 of this guide to prepare.
2. Remove the side cover.
3. Locate the position of the jumpers on the mother board you are changing.
4. Move the jumper strap to the CMOS clear position.

   Refer to the previous illustration to find the location of the jumper.

   IMPORTANT: Keep the removed jumper strap for future use.

5. Wait for a while (about 5 seconds), and then reinstall the jumper block to the default position.
6. Reinstall the side cover removed in Step 2.
7. Plug the power cord to your server and turn on the server.
8. Press **F2** at the prompt to run the BIOS SETUP utility, and select "Load Setup Defaults" at the Exit menu.

Clearing Password

1. See the section "Preparing for Installation and Removal" as described in Chapter 9 of this guide to prepare.
2. Remove the side cover.
3. Remove the jumper strap on the BIOS password clear jumper.

   IMPORTANT: Keep the removed jumper strap for future use.

4. Reinstall the side cover removed in Step 2.
5. Plug the power cord to your server and turn on the server.
6. POST stops at the error message shown below.

   ERROR
   B151 Password Cleared By Jumper

   Press <F1> to resume, <F2> to Setup

7. Turn off the power of the server. Install the jumper strap removed in Step 3.
8. Reassemble the server.

Chapter 5

Installing the Operating System with Express Setup

This section describes information on using Express Setup to install and configure the following operating systems to the server.

- Microsoft® Windows® Server 2003 Standard Edition / Microsoft® Windows® Server 2003 Enterprise Edition
- Microsoft® Windows® Server 2003 R2 Standard Edition / Microsoft® Windows® Server 2003 R2 Enterprise Edition

To use the server with the other operating systems described in this section, contact your service representative.

IMPORTANT: Before installing the operating system, adjust the system date and time by using the BIOS setup utility "SETUP." See Chapter 4 for detail.

About Express Setup

"Express Setup" helps you to install the Windows Operating System.

The setup automatically configures the RAID system and installs the Operating System and some management software.

IMPORTANT: Executing the Express Setup erases all data on the hard disk drive.

You can also use "Configuration disk" at "Express Setup" in order to save or backup parameters for installation.

The Configuration disk is able to have some parameters files that include the configuration information for the server setup.

If you want to set up the server as before, execute the Express Setup with the parameters file you have saved that time.

NOTES:

- The parameters file is not mandatory to set up the system.
- If you want to create a parameters file, have a blank floppy disk (MS-DOS 1.44MB format) ready.
- If you want to use the drivers located on the "OEM-Disk for Mass Storage Device" that ships with optional boards, a parameters file is mandatory.
- You can create a parameters file in advance using "Configuration Diskette Creator" included in NEC EXPRESSBUILDER.

Microsoft Windows Server 2003

This subsection provides information on installing Microsoft® Windows® Server 2003 in the server. Read instruction in this section before proceeding the installation.

NOTES:

- Express Setup does not support the installation of Windows Server x64 Editions. If you want to install it, see Appendix D.
- If you want to install the Windows Server 2003 without using Express Setup, see Appendix E.

Installation Notice

This section explains what you should know before installing the Windows.

About Windows Family

Express Setup supports the installation of the following Windows 2003 editions:

- Microsoft® Windows® Server 2003 Standard Edition / Microsoft® Windows® Server 2003 Enterprise Edition (hereinafter, referred to as "Windows Server 2003")
- Microsoft® Windows® Server 2003 R2 Standard Edition / Microsoft® Windows® Server 2003 R2 Enterprise Edition (hereinafter, referred to as "Windows Server 2003")

If you want to install the other OS, contact your sales representative.

Installing Optional Mass Storage Driver

To install optional mass storage driver, see "Installing Optional Mass Storage Driver" of "Configuration Diskette Creator" in Chapter 6 to create setup inf file.

BIOS Settings

Before installing Windows Server 2003, confirm if the BIOS settings are correct.

See Chapter 4 to confirm the settings.

NEC ESMPRO Agent

NEC ESMPRO Agent requires to install the necras.sys driver on your Windows system. If you install the Windows without using the Express Setup, run the "Update Express5800 system" in Master Control Menu.

Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER CD-ROM attached to your system supports the following optional Raid Controller and SCSI Controller:

> **NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-FD for Mass storage device"), except ones listed below, see "Installing with the OEM-FD for Mass storage device" and "Installing Optional Mass Storage Driver" of "Configuration Diskette Creator" in Chapter 6.

- Supporting installation of OS in NEC EXPRESSBUILDER
  - N8103-91 Disk Array Controller (Internal SAS HDD)
  - N8103-99 Disk Array Controller (0ch)
  - LSI Logic Embedded MegaRAID™ (Controller on the I/O board)
- Other optional boards
  - N8103-80F Disk Array Controller (SCSI 1ch)
  - N8103-81F Disk Array Controller (SCSI 2ch)
  - N8103-75 SCSI Controller
  - N8103-95 SCSI Controller
  - N8190-126 SCSI Controller

Windows Server 2003

Express Setup can install the Windows Server 2003.

Confirm below notes before installing the Windows.

IMPORTANT:

- Before starting the installation, complete all the process of hardware settings (BIOS and optional board settings).
- After completing Express Setup, see "Setup for Solving Problems".

Installing on the Mirrored Volume

If you want to install Windows Server 2003 on the volume that is mirrored using "Disk Management", invalid the mirroring before operating the installation to set back to the basic disk, and valid the mirroring again after the installation has completed.

Creating, invalid, delete mirror volume can be operated from "Disk Management" in "Computer Management".

Mounting MO Device

Do not mount an MO device on your server during the Windows installation.

About Removable Media

Do not set removable media, such as DAT, into the device mounted on your server during the OS installation.

Connecting Hard Disk Drive

Do not connect the other hard disk drives except the drive that you want to create as the Windows system drive.

Creating Partition Size

The size for the partition that the system is to be installed can be calculated from the following formula.

Size necessary to install the system + Paging File Size + Dump File Size + Application Size

Size necessary to install the system = 3500MB (Windows Server 2003 R2)
3500MB (Windows Server 2003 with Service Pack1)
4400MB (Windows Server 2003 + Service Pack1 CD-ROM)

Paging File Size (Recommended) = Mounted Memory Size * 1.5

Dump file Size = Mounted Memory Size + 12MB

Application Size = Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

3500MB + (512MB * 1.5) + (512MB + 12MB) + Application Size
= 4792MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

Re-installing to the hard disk drive which has been upgraded to Dynamic Disk

You cannot re-install Windows Server 2003 with the current partition of the hard disk drive upgraded to Dynamic Disk kept remained.

If you want to keep the current partition remained, see Appendix D to re-install the system.

About Maintenance Partition (the area displayed as "MAINTE_P")

The maintenance partition for server maintenance is reserved in the head of Hard Disk Drive (a partition of approximately 55MB).

This area is for saving some maintenance utilities.

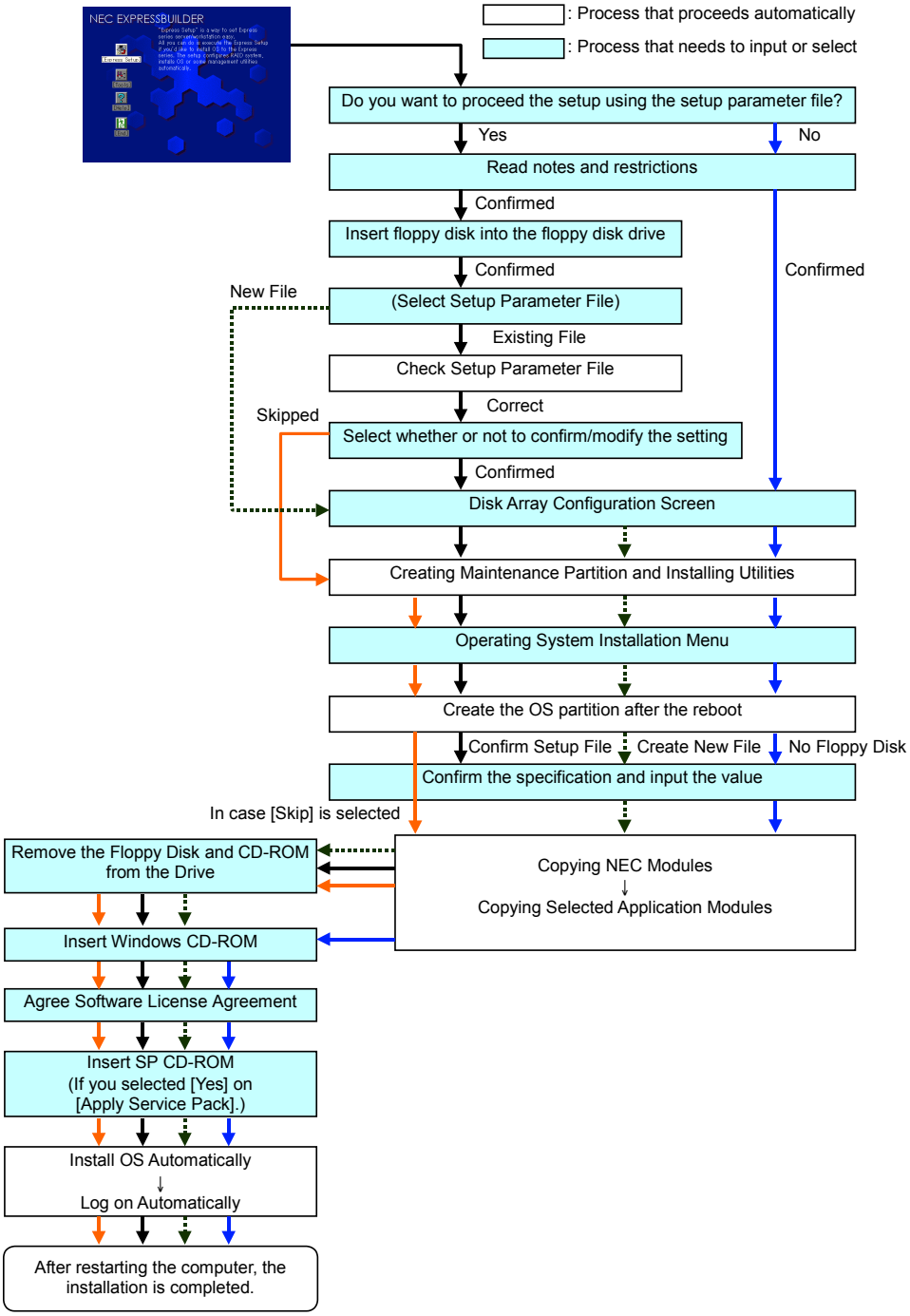
Do not delete the maintenance partition.

Application of Service Pack

When using Windows Server 2003 with this equipment, surely apply Service Pack 1. When installing Windows Server 2003 R2, it is not necessary to apply Service Pack 1.

The Flow of Setup

This section shows the flow of the Express setup.


NEC EXPRESSBUILDER
: Process that proceeds automatically
: Process that needs to input or select
Do you want to proceed the setup using the setup parameter file?
Yes
No
Read notes and restrictions
Confirmed
Insert floppy disk into the floppy disk drive
Confirmed
Confirmed
New File
(Select Setup Parameter File)
Existing File
Check Setup Parameter File
Correct
Skipped
Select whether or not to confirm/modify the setting
Confirmed
Disk Array Configuration Screen
Creating Maintenance Partition and Installing Utilities
Operating System Installation Menu
Create the OS partition after the reboot
Confirm Setup File
Create New File
No Floppy Disk
Confirm the specification and input the value
In case [Skip] is selected
Remove the Floppy Disk and CD-ROM from the Drive
Copying NEC Modules
↓
Copying Selected Application Modules
Insert Windows CD-ROM
Agree Software License Agreement
Insert SP CD-ROM
(If you selected [Yes] on [Apply Service Pack].)
Install OS Automatically
↓
Log on Automatically
After restarting the computer, the installation is completed.

Installing the Windows Server 2003

Express Setup proceeds the setup by specifying the necessary information on the wizard. You can also save the setup information created on the wizard in a floppy disk as a setup file.

NOTES:

- Prepare a floppy disk to use as Configuration Disk if you want to save the parameters or use the drivers located on the "OEM-Disk for Mass Storage Device" that ships with optional boards. When using the floppy disk, the Express setup can continue the setup without specifying the parameters.
- On remote KVM console, you cannot use the mouse in Procedures 1 through 14. Use the keyboard.

  →: Used to move to the next screen.

  ←: Used to return to the previous screen.

  ↑ ↓: Used to select a menu.

  F1: Displays help.

  Enter: Used to select [OK] or to decide each item.

  Esc: Used to select [Cancel].

1. Turn the power of peripheral device on, and then turn on the server.

   NOTES:
   - Do not mount an MO device on your server during the Windows installation.
   - Do not connect the other hard disk drives except the drive that you want to create as the Windows system drive.
   - If you create multiple logical drives in your system, refer to "Reinstalling the operation system when multiple logical drives exist" (Appendix D).

2. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive of the server.
3. Press **Ctrl**, **Alt**, and **Delete** to reboot from the NEC EXPRESSBUILDER.

   The system boots from the CD-ROM and NEC EXPRESSBUILDER starts.
4. Click [Express Setup].
5. The message, "Do you want to use the parameters file in order to set up the Express server or workstation?", appears.

   If you want to use the parameters file, click [Yes].

   If not, click [No].

6. "NOTE" appears. Click [Confirm] after reading that.

> **NOTE:** If any operating systems have been installed on the hard disk drive already, the message that prompts you to select continuing or stopping appears.

7. If you select "Yes" at step 5, place a floppy disk into the floppy disk drive mounted on the server.

If not, go on the next step.

> **NOTE:** If you set the floppy disk at this step, do not remove the floppy disk from the server until the message as removing the floppy disk appears.

[Using the existing Configuration Disk]

The parameters files in the floppy disk is listed in dialogue-box.

1) Select a parameters file to use in the Express Setup.

   After the parameters file is specified, the message "Do you want to review or modify the Setup File parameters?" appears.

2) If you want to modify or confirm the parameters file, click [Review]. If not, click [Skip].

   Click [Review] → Go on the next step.
   Click [Skip] → Go on the step 9.

[Using a blank disk]

1) Click the box under [Setup File Name: (A)] or press **A**.

   The dialog box appears.

2) Input the file name and click [Use].

8. Confirm or modify the parameters of disk array configuration.

> **NOTE:** If you do not use disk array controller, go on the next step.

If a Disk array controller is installed or the On-board RAID is enabled, the [Configure RAID] dialog-box appears. Confirm the parameters, modify if necessary, and then click [OK].

When the dialogue-box is closed, the Express setup automatically performs the RAID configuration, creating Maintenance partition and installing several utilities.

9. Select the installing Operating system.

Select "Windows" from the menu.

> **NOTE:** If you select "Skip" at step 7, this menu does not appear. Go on the step 13.

10. Next, [Basic Information] wizard appears. Confirm the parameters, modify if necessary, and then click [Next].

After that, click [Next], [Back], or [Help] on the screen to continue. Modify the parameters each time if necessary.

IMPORTANT:

- Reserve the partition to install the OS more than the minimally required size.
- If you select "Use Existing Partition" at "System Partition", the information included in the first partition (excluding maintenance partition) will all be formatted and deleted.The information included in the other partition will be retained. In the figure below, describes the partition which information will be deleted when maintenance partition exists.

First Partition <Maintenance Partition> Retained	Second Partition Deleted	Third Partition Retained	Fourth Partition Retained

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use Existing Partition" at "System Partition".
- If you specify other than 4095MB for the "Installing Partition", it is necessary to convert to NTFS.
- If "Use Existing Partition" at "System Partition" is selected but the partition other than the one to install Windows Server 2003 does not exist (excluding maintenance partition), Express Setup will reserve the maximum area of the hard disk drive to install Windows Server 2003.
- You can not go to the next screen if the specification is incorrect.
- To specify the setup parameters, the number of characters must not exceed the limit as shown in the table below. (Double-byte character shall be counted as two characters.)

Item	**Value specified**	**Max. number of characters**
Create Users	User Name	19
	Group Name	20
	Full Name	63
	Explanation	47
Create Groups	Group Name	20
	Explanation (Group Name)	47

NOTE: If you press **F9** in [Role of Computer], the installation will be done using the default values of Express Setup for the subsequent settings automatically. (Only when the [OK] is displayed in the lower right of the screen).

11. Copy the modules for the optional mass storage driver.

If you want to install the optional mass storage driver, insert the floppy disk attached to mass storage driver into the floppy disk drive and follow the message to operate the installation.

NOTE: You can use this function only when the floppy disk drive is attached to the system.

12. Remove the NEC EXPRESSBUILDER CD-ROM from the DVD-ROM drive according to the message.

If you proceed the setup by using setup parameter file, remove the floppy disk from the floppy disk drive.

Insert Windows Server 2003 CD-ROM into the DVD-ROM drive.

[Agree Software License Agreement] screen appears.

13. Read the agreement carefully and click [I agree.] or press **F8** if you do agree. If you do not agree, click [I disagree] or press **F3**.

IMPORTANT:

- If you do not agree to this agreement, the setup terminates and Windows Server 2003 will not be installed.
- If "NetWare Gateway (and Client) Service" is specified to install, the window to specify the details of "NetWare Gateway (and Client) Service" pops up on the first logon. Specify the appropriate value.

14. If you selected [Yes] on [Apply Service Pack] at Basic Information, follow the procedure below.

1) Follow the message to take Windows Server 2003 CD-ROM out of the DVD-ROM drive.
2) Follow the message to insert Windows Server 2003 Service Pack 1 or later into the DVD-ROM drive.

Windows Server 2003 and the specified application will be installed automatically and logon to the system. Install and configure the device drivers.

15. If you install Microsoft Windows Server 2003 R2, insert Microsoft Windows Server 2003 R2 Standard Edition DISK 2 or Microsoft Windows Server 2003 R2 Enterprise Edition DISK 2 into the DVD-ROM drive after the OS installation.

Hereinafter, proceed operations according to the message.

When the installation has finished, remove Microsoft Windows Server 2003 R2 Standard Edition DISK 2 or Microsoft Windows Server 2003 R2 Enterprise Edition DISK 2 from the DVD-ROM drive, and restart the system.

Now the Setup using Express Setup has completed.

Installing and Setting Device Drivers

Follow these steps to install and configure the device drivers.

PROSet

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhances throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.
2. The [Windows Explorer] dialog starts.

   * The procedure in the case of the standard start menu

     Click Start menu and click [Windows Explorer].

   * The procedure in the case of the classic start menu

     Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "DXSETUP.EXE" in the following directory.

   DVD-ROM Drive Letter:\WINNT\DOTNET\NS4\PROSET\2KXPWS03

   The [Intel® PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Choose "Complete" and click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finish].
9. Restart the system.

Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhance the through put by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

IMPORTANT:

- AFT/ALB setup must be operated after installing the drivers and restarting the system.
- All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.

If you want to utilize AFT/ALB feature, follow the procedure below to setup.

1. The [Intel (R) PROSet] dialog box appears.

   * The procedure in the case of the standard start menu

     Click Start menu, point to [Control Panel], [administrative tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.

   * The procedure in the case of the classic start menu

     1. Click Start menu, point to [Settings] and click [Control Panel].
     2. Click [administrative tools].
     3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.

2. Select [Teaming] tab and then check on [Team with other adapters]and click [New Team...].

   The [New Team Wizard] dialog box appears and click [Next].

   * Specify a name for the team if it necessary.

3. Select the adapters to include in team.
4. Select "Adapter Fault Tolerance" or "Adaptive Load Balancing" and click [Next].
5. Click [Finish].
6. The setup will go back to [Intel (R) PROSet for Wired Connections] dialog box, so click [OK].
7. Restart the system.

Network Driver

Specify the details of network driver.

One standard network driver that is mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

IP addresses is not be able to set when the "Internet Protocol (TCP/IP)" check box OFF.

This phenomenon will occur with the certain condition.

Check ON the "Internet Protocol (TCP/IP)" check box and IP address will be able to set.

[When PROSet is not installed]

1. The [Local Area Connection Properties] dialog box appears.

* The procedure in the case of the standard start menu

  1. Click Start menu, Click [Control Panel], Click [Network Connections], and Click [Local Area Connection].

* The procedure in the case of the classic start menu

  1. Click Start menu, Click [Settings] and Click [Network Connections].

     The [Network Connections] dialog box appears.

  2. Right-click [Local Area Connection] and click [Properties] from pop-up menu.

2. Click [Configure].

The property dialog box for network adapter appears.

3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.

4. Click [OK] on the property dialog box for network adapter.

[When PROSet is installed]

1. The [Intel(R) PROSet] dialog box appears.

   * The procedure in the case of the standard start menu

     Click Start menu, point to [Control Panel], [administrative tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.

   * The procedure in the case of the classic start menu

     1. Click Start menu, point to [Settings] and click [Control Panel].
     2. Click [Administrative tools].
     3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.

2. Click the [Link] and specify the [Speed and Duplex] value the same as the value specified for HUB.
3. Click [Apply] and click [OK].

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

NOTE: We recommend you to add [Network Monitor] at [AddingServices]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setting for Solving Problems" described later in this chapter.

Optional Network Board Driver

If you want to utilize optional Network Board (N8104-112/119/111/86/120/121), the network driver will be installed automatically. Therefore, the driver attached to the Network board should not be used.

If you want to utilize optional Network Board (N8104-86/111), install the driver stored in NEC EXPRESSBUILDER CD-ROM.

In case of utilizing (N8104-86/111)

"DVD-ROM Drive Letter:\WINNT\DOTNET\NS4\PRO100\WS03XP2K"

In case of utilizing (N8104-112/119/120/121)

"DVD-ROM Drive Letter:\WINNT\DOTNET\NS4\PRO1000\WS03XP2K"

If the procedure of installation is not clear, refer to the installation procedure described in the section "Installation of the Optional Network Board Driver".

Installation of the Optional Network Board Driver

1. Start Device Manager.
2. Click [Network adapters] and Double-click [(Network Adapter Name)].

   [(Network Adapter Name) Properties] appears.

   NOTE: [(Intel(R) PRO/1000...)] is the name of On-Board adapter. All other names show the Optional Network Board.

3. Click [Driver] tab and click [Update Driver...]. [Hardware Update Wizard] appears.
4. Select the [Install from a list or specific location(Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and check off the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(N8104-86/111)], specify
   [DVD-ROM Drive Letter:\WINNT\DOTNET\NS4\PRO100\WS03XP2K].

   Then click [Next].

   When using [(N8104-112/119/120/121)], specify
   [DVD-ROM Drive Letter:\WINNT\DOTNET\NS4\PRO1000\WS03XP2K].

   Then click [Next].
7. Click [Finish].

Graphics Accelerator Driver

The graphics accelerator driver will be automatically installed by Express Setup or system update.

Installing SCSI Controller Driver (N8103-75/95/N8190-126)

If you utilize SCSI controller driver (N8103-75/95/N8190-126), update your system with NEC EXPRESSBUILDER CD-ROM attached to your system.

The SCSI controller driver will be installed automatically.

Installing Disk Array Controller Driver (N8103-80F/81F)

To additionally install the N8103-80F/81F in a system containing Windows Server 2003, connect the controller and take the following steps to install the driver:

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools] → [Computer Management].
2. Double-click [LSI Logic Megaraid SCSI 320-1/2] which Device Manager lists.
3. Click the [Driver] tab and click [Update Driver...].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select the "Search for the best driver in these locations." and check the "Search removable media [floppy, CD-ROM...]" check box.
6. Insert "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, and click [Next].
7. Copying of the driver is completed, and the [Completing the Hardware Update Wizard] dialog box below appears. Click [Finish].

Notes of N8103-75

After installing OS, the driver may not be installed depending on the method of installing OS occasionally.

In that case, please install the driver by the following procedures.

1. Start [Device Manager] from [Start] menu → [Control Panel]→ [Administrative Tools]→ [Computer Management].
2. Double-click the SCSI Controller driver which Device Manager lists as Other device.
3. Click [Update Driver].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select "Don't search. I will choose the driver to install" and click [Next].
6. Click [Have Disk..].
7. Insert "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, enter "a:\" into "copy manufacturer's file from:" and click [OK].
8. Specify the following driver and click [Next].
   - [INITIO INI-A10XU2W PCI SCSI Controller] (When N8103-65F board is installed.)
   - [Adaptec SCSI Card 29320ALP -Ultra320 SCSI] (When N8103-75 board is installed.)

   The installation of the driver is completed.

   Restart the system according to the message appeared on the screen.

Available switch options for Windows Server 2003 Boot.ini file.

Many different switches will be available if you edit Boot.ini file.

For the available switch options, refer to the following information:

- Microsoft Knowledge Base - Article ID: 833721

  "Available switch options for the Windows XP and the Windows Server 2003 Boot.ini files"

If your system has a memory capacity in excess of 4GB in its installing, adding /PAE switch in Boot.ini file will enable the system to be installed with over 4GB of memory.

However, the Microsoft operating system products which support /PAE switch option are limited.

Refer to the following article in Microsoft Knowledge Base to check the supported products.

- Microsoft Knowledge Base - Article ID: 291988

  "A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

Below is the example on how to add /PAE switch to Boot.ini file.

1. Click [Start], point to [Settings], and then click [Control Panel].
2. In [Control Panel], double-click [System].
3. Click the [Advanced] tab, and then click [Settings] under [Setup and Recovery].
4. Under [System Setup], click [Edit] to open [Boot.ini].
5. Add "/PAE" to [Operating Systems] section in [Boot.ini] file, and then save it.

   <Example of Boot.ini file>

   ```
   [boot loader]
   timeout=30
   default=multi(0)disk(0)rdisk(0)partition(2)\WINDOWS
   [operating systems]
   multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003" /fastdetect
   multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003, PAE" /fastdetect
   /PAE
   C:\CMDCONS\BOOTSECT.DAT="Microsoft Windows Recovery Console" /cmdcons
   ```

   This is the end of editing Boot.ini file.

NOTE: If you choose one of the items in the "Default operating system" drop-down list box in [Setup and Recovery] group box, you can make your system start automatically from the switch you specified.

Setting for Solving Problems

Setup the following issue in advance so that your computer can recover from any trouble precisely and as soon as possible when it should occur.

Memory Dump (Debug Information)

This section describes the procedures for collecting memory dump (debug information) in the server.

IMPORTANT: Cautions for the Memory Dump

- The staff of maintenance service representative is in charge of collecting memory dump. Customers need only to specify the memory dump.
- If any trouble occur after specifying the process below, the message to inform that the system is in short of virtual memory may appear, but continue to start the system. If you restart the system in such case, memory dump may not be stored correctly.

Follow the procedure below to specify.

1. Select [Control Panel] and click [System].

   The [System Properties] dialog box appears.

2. Select [Advanced] tab.
3. Click [Settings] on the [Startup and Recovery] group box.

IMPORTANT:

Windows Server 2003 x64 Editions

- To specify "Complete Memory Dump" to write the debug information is recommended.
  If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 1MB".
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

Windows Server 2003

- To specify "Complete Memory Dump" to write the debug information is recommended.
  If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 12MB"(In case the memory capacity is more than 2GB, a free area of "2048+12MB" or more).
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

4. Specify "Complete memory dump" and modify [Dump file:] in the [Write debugging information] group box.

   e.g. Write the debug information in D drive write the file name "MEMORY.DMP".

   D:\MEMORY.DMP

5. Click [Settings] on the [Performance] group box.

   The [Performance Options] window appears.

6. Click [Advanced] tab on the [Performance Options] window.

7. Click [Change] on the [Virtual memory] group box.

8. Modify [Initial Size] in the [Paging file size for selected drive] box to the value larger than [Recommended], and click [Set].

   IMPORTANT:

   - The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
     Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
   - For more information on "Recommended" value, see "Creating Partition Size" described earlier.
   - In case the memory is expanded, re-specify the paging file to suit the new memory size.

9. Click [OK].

   The message to restart the system may appear according to the modified specification. In such case, follow the message to restart the system.

Windows Dr. Watson

Windows Dr. Watson is a debugger for application errors. If any application error is detected, Dr. Watson diagnoses the server and logs diagnostic information (log). Follow the procedure below and specify Dr. Watson to collect diagnostic information.

1. Click [Run] on Start menu.
2. Type "drwtsn32.exe" in the [Open] box, and click [OK].

   The [Dr. Watson for Windows] dialog box appears.
3. Specify the location to store the diagnostic information in the [Log File Path] box.

   The diagnostic information will be stored with the file name "DRWTSN32.LOG".

   NOTE: You can not specify network path. Specify the path on local computer.
4. Specify the location of crash dump file in the [Crash Dump] box.

   NOTE: "Crash Dump File" is a binary file that can be read with Windows Debugger.
5. Check the following check box on the [Option] box.

   ☐ Dump Symbol Table
   ☐ Dump All Thread Contexts
   ☐ Add To Existing Log File
   ☐ Create Crash Dump File

   For more information on each function above, refer to Online Help.
6. Click [OK].

Network Monitor

Utilizing Network Monitor helps you to investigate and manage with network trouble. To utilize Network Monitor, you need to restart the system after the installation has completed, so we recommend to install Network Monitor before any network trouble may occur.

1. Point to [Settings] from Start menu and click [Control Panel].

   The [Control Panel] dialog box appears.

2. Double-click [Add or Remove Programs].

   The [Add or Remove Programs] dialog box appears.

3. Click [Add/Remove Windows Component].

   The [Windows Components Wizard] dialog box appears.

4. Click [Management and Monitoring Tools] and then click [Details].

   The [Management and Monitoring Tools] dialog appears.

5. Click to select the [Network Monitor Tools] check box, and then click [OK].
6. The [Windows Components Wizard] dialog box appears again, so click [Next].
7. If the setup asks to install the disk, insert the OS CD-ROM into CD-ROM drive and click [OK].
8. Click [Finish] in the [Windows Component Wizard] dialog box.
9. Close the [Add or Remove Programs] dialog box.
10. Close the [Control Panel] dialog box.

To start Network Monitor, point to [Program] → [Administrative Tools] and click [NetworkMonitor]. For information on how to operate Network Monitor, refer to Online Help.

Installing Maintenance Utilities

Various maintenance utilities are contained in your NEC EXPRESSBUILDER CD-ROM. See Chapter 6 for installing the utilities to your server or management workstations.

Updating the System – Installing Service Pack –

Update the system in the situation below:

- Modified system configuration.
- Recovered the system using recovery process.

Log on to the system with the account that has administrative authority (e.g. Supervisor) and insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive of the server.

[Setup Software] in [Master Control Menu] screen appears, so left-click the item. Click [Update the System] from the menu and the setup will start. After that, follow the message to continue the setup process.

Making Backup Copies of System Information

The system information includes the current BIOS settings and any specific information for the server.

Save the information after completing the system setup.

Without the backup data, you will not be able to recover the information.

You can save the information by the following process.

1. Insert the "NEC EXPRESSBUILDER" CD-ROM into the DVD-ROM drive and reboot the system.
2. Select [Tools].
3. Select [Off-line Maintenance Utility].
4. Select [System Information Management].
5. Insert a floppy disk into the floppy disk drive.
6. Select [Save].

Installing with the OEM-FD for Mass Storage Device

This section explains how to setup with the OEM-FD. You usually do not have to do as follows. If your system has any Mass storage devices, you have to set as follows depending on your system. The detailed information is provided by the manual of the Mass storage device.

Installation of Mass storage device not to be supported by ExpressSetup

If you would like to install or re-install the OS when the system has new mass storage device not to be supported by NEC EXPRESSBUILDER, you have to set as follows.

1. Read the manual supplied with the mass storage device before setting the server.
2. If the mass storage device is disk array controller, configure the RAID system before running the NEC EXPRESSBUILDER.
3. Boot the system from the NEC EXPRESSBUILDER CD-ROM.
4. (a) When the dialog of Disk array configuration appears, check "Use Existing Array".

   (b) Check "Apply OEM-FD for Mass storage device".
5. Copy the driver for the mass storage device in the ExpressSetup.

   Insert the floppy disk attached the mass storage device into the floppy disk drive.

   Continue the ExpressSetup, referring to messages displayed on the display.

Chapter 6

Installing and Using Utilities

This section describes how to use the NEC EXPRESSBUILDER CD-ROM that comes with your server and to install the utilities stored on the NEC EXPRESSBUILDER.

NEC EXPRESSBUILDER

NEC EXPRESSBUILDER has some maintenance utilities and management software. NEC EXPRESSBUILDER also helps you to install NOS (Windows Server 2003).

NOTE: Before using NEC EXPRESSBUILDER for initial setup, complete the hardware configuration.

NEC EXPRESSBUILDER has two executing modes depending on your operating environments. One is for using on Windows system, and the other is booted from NEC EXPRESSBUILDER CD-ROM.

- DOS-based with local console

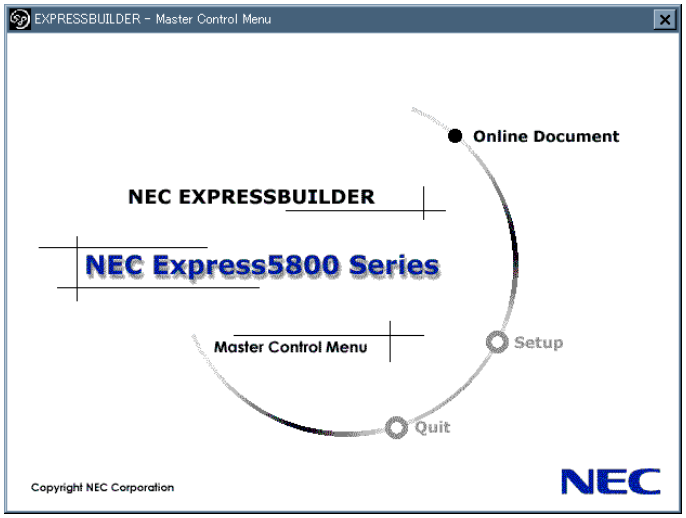
  The following menu appears on the local display after booting from NEC EXPRESSBUILDER CD. You can install NOS or run the diagnostic program, and so on.

NEC EXPRESSBUILDER
"Express Setup" is a way to set Express series server/workstation easy.
All you can do is execute the Express Setup if you'd like to install OS to the Express series. The setup configures RAID system, installs OS or some management utilities automatically.
[Express Setup]
[Tools]
[Help]
[End]

NOTE: A mouse can't be used when NEC EXPRESSBUILDER is operated with the remote KVM console. Use a keyboard.

- Windows-based

  This program is called as "Master Control Menu" that can run under the Microsoft Windows system (Windows 95 or later and Windows NT 4.0 or later). You can install the several applications and read the documentation from the menu.



NEC EXPRESSBUILDER for DOS-Based with Local Console

This subsection describes the procedures for using NEC EXPRESSBUILDER for DOS-based with local console.

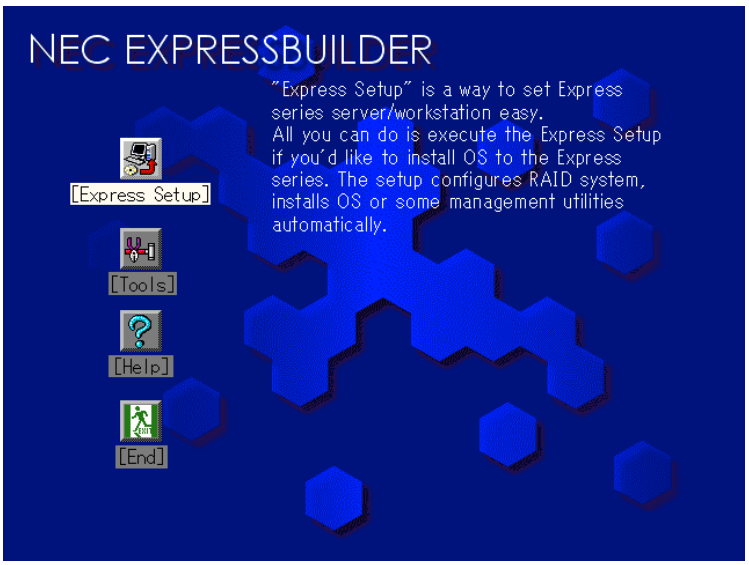
Starting NEC EXPRESSBUILDER

The following procedure instructs you to start NEC EXPRESSBUILDER.

> **IMPORTANT:** Do not remove the NEC EXPRESSBUILDER CD-ROM while NEC EXPRESSBUILDER is running.

1. Turn on peripheral devices and the server in this order.
2. Insert the NEC EXPRESSBUILDER CD-ROM supplied with your server into the DVD-ROM drive of your server.
3. Ensure that the floppy disk drive is empty.
4. Press the RESET switch or press **Ctrl**, **Alt**, and **Delete** to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

   NEC EXPRESSBUILDER boots up displaying the top menu.


NEC EXPRESSBUILDER
"Express Setup" is a way to set Express series server/workstation easy.
All you can do is execute the Express Setup if you'd like to install OS to the Express series. The setup configures RAID system, installs OS or some management utilities automatically.
[Express Setup]
[Tools]
[Help]
[End]

Express Setup

"Express Setup" is intended for initial setup of the server. Its automatic installation mode guides the user easily through the process by detailing specific hardware features and providing screen prompts for software selection and configuration. The program loads the utilities and drivers, applies RAID settings, partitions the disk, and installs the desired operating system.

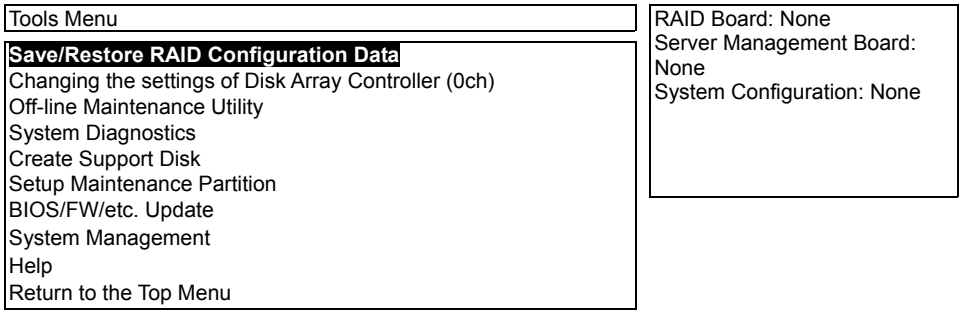
If you install Windows Server 2003, after a few tasks are completed, all that remains to be done is to remove the NEC EXPRESSBUILDER CD-ROM and install the Windows CD-ROM, input a product ID number, and acknowledge the license agreement.

IMPORTANT:

- The Express Setup is intended for the initial setup of the server system and, therefore, the Express Setup clears the contents of the hard disk drive.
- Once Express setup is started, do not remove "Configuration Diskette" from the floppy disk drive without any directions.
- Express Setup does not support the installation of Windows Server 2003 x64 Editions.

Tools

"Tools" is also intended for initial setup of the server. It provides more installation options than Express Setup and permits the user to quickly create utility support disks, run the Off-line Maintenance Utility and system diagnostic utility, set up a maintenance partition, and update the various BIOS programs.



- Save/Restore RAID Configuration Data

  The item allows the configuration information on the disk array system to be saved or restored from the floppy disk.

  – Save Disk Array Configuration Data

    The configuration information on the disk mirroring controller is saved into the floppy disk. If you set or change RAID, always use this function to save the configuration information into the floppy disk.

IMPORTANT: Some Disk Array Controllers do not support this function. In that case, this menu will not be shown.

– Restore Disk Array Configuration Data

The configuration information saved in a floppy disk is restored to NVRAM and hard disk drive on the disk mirroring controller.

If the configuration information is broken or changed by mistake, restore the configuration information.

When the defected disk array controller is replaced, the configuration information on the hard disk drive must be saved into the disk array controller.

However, if the configuration information on the new disk mirroring controller is saved into a hard disk drive, use this function to restore the configuration information.

IMPORTANT:

- Some Disk Array Controllers do not support this function. In that case, this menu will not be shown.
- This is a function for maintenance. Please do not use it except maintenance.

- Changing the settings of Disk Array Controller (0ch)

You can change the settings of the Disk Array Controller (0ch).

NOTE: The system is automatically rebooted when you change the settings.

- Off-line Maintenance Utility

Off-line Maintenance Utility is an OS-independent maintenance program that performs preventive maintenance and error analysis for your server. See Chapter 8 or online help for details.

- System Diagnostics

Executes various tests on the server system to check if the server functions are normal and if the connection between the server and additional board is normal.

After the System Diagnostics is executed, a system check program assigned to each model starts. See Chapter 7 for details.

- Create Support Disk

NEC EXPRESSBUILDER CD-ROM contains a number of device drivers and utilities that you can put on floppy disks and load onto your system.

Using this menu creates a support disk by copying from the NEC EXPRESSBUILDER CD-ROM. If your system has the Windows operating system, you may find it more convenient to use NEC EXPRESSBUILDER for Windows-based to make support disks.

Write the displayed title on the floppy disk label, which is useful for management in the future. Customers are to provide a floppy disk to create a support disk.

– Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILER

Creates a support disk for installing Windows Server 2003 x64 Editions.

– Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER

Creates a support disk for installing Windows Server 2003. (No need to create this disk when installing the operating system with the Express Setup.)

– ROM-DOS Startup FD

Creates a support disk for starting the ROM-DOS system.

– Off-line Maintenance Utility Bootable FD

Creates a support disk for activating the Off-line Maintenance Utility.

■ Setup Maintenance Partition

Maintenance partition is a specific partition for the server and created on your system disk. About 55MB of the maintenance partition includes the various maintenance utilities and executable commands.

In this menu, you can create the maintenance partition, install the various utilities, and update the utilities. The maintenance utilities installed in the maintenance partition are system diagnostics and Off-line Maintenance Utility.

IMPORTANT:

- Do not reset or turn off the server while the running this menu. If the processing is discontinued, the system becomes unable to start.
- The existence of the maintenance partition may be identified from the operating system. In order to retain the Configuration Data, do not delete the partition.

NOTES:

- The maintenance partition, once created, will not be recreated again.
- When the maintenance partition does not exist, some menu items do not appear.

– Create Maintenance Partition

NEC EXPRESSBUILDER creates about 55MB of the maintenance partition on the system disk (or disk array system) as work area. The various utilities are installed when the maintenance partition is created successfully or when the maintenance partition is already created.

– Install Maintenance Partition Utilities

Various utilities are installed in the maintenance partition from the CD-ROM.

– Update Maintenance Partition Utilities

Various utilities are copied in the Maintenance Partition from the update disk. This menu is only used when the update disk is supplied from your service representative or attached with your system.

– FDISK

Execute FDISK command of ROM-DOS system. You can create/delete partitions, etc.

- System Management

  The parameters of BMC (Baseboard Management Controller) are set for remote control and alert.

- BIOS/FW/etc. Update

  This menu allows you to update the software module such as BIOS and firmware of the server by using the update disk (3.5-inch floppy disk) that is distributed from NEC customer service representative.

  After rebooting the system, an update program is started automatically from the floppy disk, and the various BIOS and firmware programs are updated.

  IMPORTANT: Do not turn off the server while the update program is running. If the update processing is discontinued, the system becomes unable to start.

- Help

  Displays explanations about various functions of NEC EXPRESSBUILDER.

- Return to the Top Menu

  Choosing this menu returns to the Top Menu.

NEC EXPRESSBUILDER for DOS-based with Remote Console

This subsection describes the procedures for using NEC EXPRESSBUILDER for DOS-based with remote console.

NEC EXPRESSBUILDER contains the remote console feature that allows the system administrator to set up the server from the management workstation (management PC) via the network or the server's COM B (serial) port.

IMPORTANT:

- Do not use this feature on any other computer than the server, or on any other server obtained without the NEC EXPRESSBUILDER. Doing so may cause a failure of the server.
- To use the remote console feature, a floppy disk containing a configuration information file named "CSL_LESS.CFG" must be inserted in the floppy disk drive. If "CSL_LESS.CFG" is not found in floppy disk, no menu is displayed on the management PC.
- If you fail to configure the disk array controller N8103-80F or 81F from the remote console, try again using the server console.
- The system may fail to operate with the transfer rate of 115.2 Kbps for serial console redirection. Specify any other transfer rate than 115.2 Kbps.

Starting

The following two methods are available to start the server.

- Running NEC EXPRESSBUILDER from the management PC via LAN
- Running NEC EXPRESSBUILDER from the management PC via direct connection (COM B)

For the procedure for starting NEC EXPRESSBUILDER for DOS-based with Remote Console, see "NEC DianaScope".

IMPORTANT:

- Do not change the boot device order in BOOT menu in BIOS SETUP. NEC EXPRESSBUILDER cannot be used if the DVD-ROM drive is not the first device to launch the system.
- To use the remote console feature, a floppy disk containing a configuration information file must be inserted in the floppy disk drive. You can create a configuration information file by using System Management feature in the Tools menu or by NEC DianaScope Configuration menu. The configuration information file must be named as "CSL_LESS.CFG" and stored in the root directory of the floppy disk.

NOTE: The following items of BIOS setup information will be set as shown below.

- LAN Controller: [Enabled]
- Serial Port A: [Enabled]
  Base I/O Address: [3F8]
  Interrupt: [IRQ 4]
- Serial Port B: [Enabled]
  Base I/O Address: [2F8]
  Interrupt: [IRQ 3]
- BIOS Redirection Port: [Serial B]
- Baud Rate: [19.2K]
- Flow Control: [CTS/RTS]
- Console Type: [PC ANSI]

Top Menu

Shown below are the top menu items.

- Setup

  Automatically sets up the server.

- Tools

  Launch the features of NEC EXPRESSBUILDER individually.

- Help

  Help message on NEC EXPRESSBUILDER.

- Quit

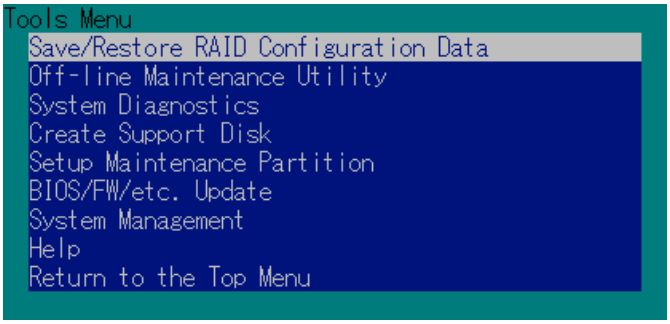
  Quit NEC EXPRESSBUILDER.

Setup

The NEC EXPRESSBUILDER checks the hardware configuration of the server. The disk array and maintenance partition are automatically configured.

Tools

When you select the [Tools] on the Top Menu, the following screen appears.



The menu items available only in remote console operation among those described in section "NEC EXPRESSBUILDER for DOS-based with Local Console" are displayed. See the previous subsection for detailed explanation of menu items.

IMPORTANT: The following is varied from the [Tools] menu in the local console mode.

- Test items and operation method of System Diagnostics. See Chapter 7 for details.

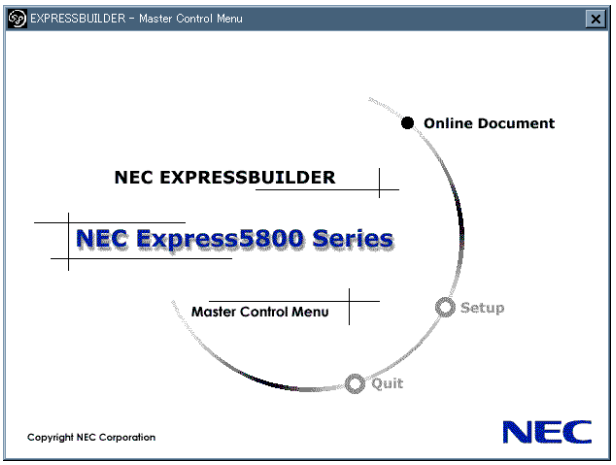
NEC EXPRESSBUILDER for Windows-Based (Master Control Menu)

The Master Control Menu is used to,

- Read the User's Guide or the other documents, and
- Update the server system (Windows drivers), and
- Install the management software.

NOTES:

- Master Control Menu requires Microsoft Windows 95 (or later) or Windows NT 4.0 (or later).
- Some documents are provided in the PDF format. Use the Adobe Reader to read these documents.



Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive. Master Control Menu appears on the screen automatically. If the Autorun function is invalid in your system, run the \MC\1ST.EXE file in the CD-ROM directly. Some menu items are grayed-out when the logon user does not have the authority of the administrator or the menu item is not available for your system.

To use Master Control Menu,

- Click on [Online Document], [Setup] or [Quit], or
- Click the right mouse button on Master Control Menu window.

CONFIGURATION DISKETTE CREATOR

"Configuration Diskette Creator" is a tool to create [Configuration Diskette] that is used for configuring the server with the Express Setup (see Chapter 5 for details).

If you use the Configuration Diskette created by the Express Setup and Configuration Diskette Creator to operate the setup, you can setup from the installation of OS to several utilities automatically except for a few key input to confirm the specification. Also, you can install the system with the same specification as before when re-installing the system. We recommend you to create [Configuration Diskette] to setup the servers from NEC EXPRESSBUILDER.

IMPORTANT: You can not create [Configuration Diskette] for Microsoft Windows Server 2003 x64 Editions.

NOTE: You can install Windows Server 2003 without [Configuration Diskette]. Also, you can modify/newly create [Configuration Diskette] during the setup with NEC EXPRESSBUILDER.

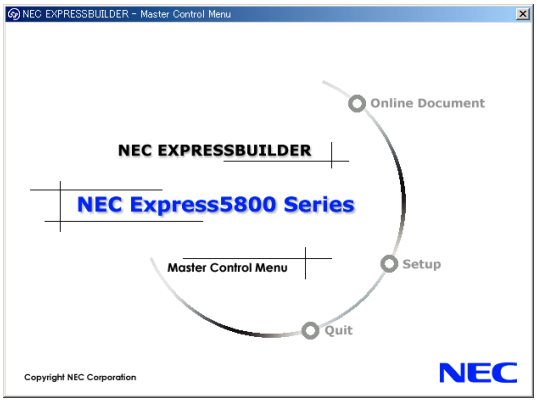
Creating Configuration Diskette

This section describes about specifying setup information that is necessary for OS installation and creating [Configuration Diskette]. Follow the procedure below.

NOTE: In the procedure below, the folder name that is specified when installing Trekking command is assumed as [Configuration Diskette Creator].

1. Start the OS.
2. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.

   Master Control Menu will appear.
3. Right-click on the screen or left-click [Setup]. The menu will appear.

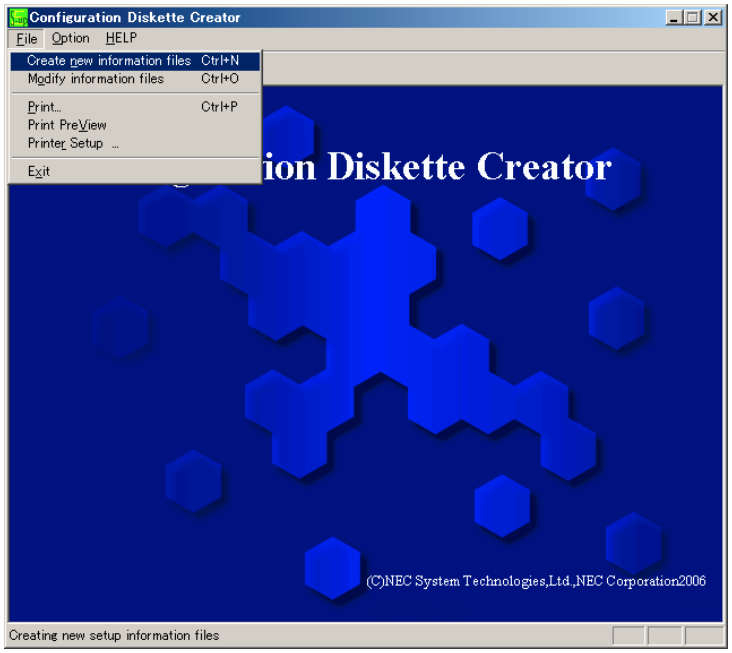


4. Click [Configuration Diskette Creator].

   Configuration Diskette Creator window is displayed.

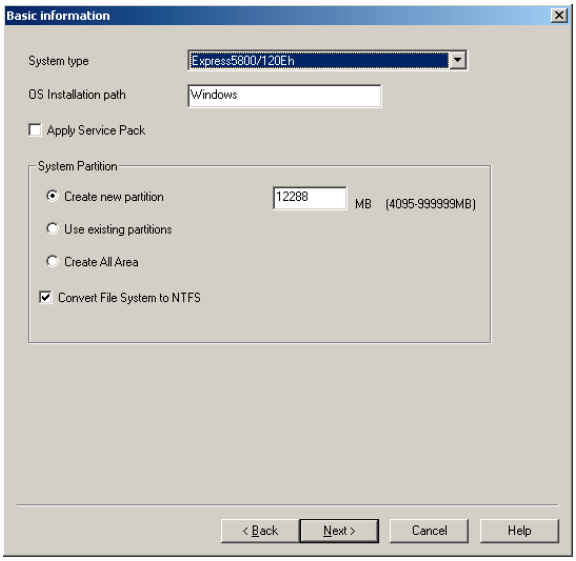
5. Click [Create New Information files] from the [File] menu.

   The [Disk Environment] dialog box will be displayed.



6. Specify each item and click [OK].

   The dialog boxes to specify setup information will be displayed in order, such as [Basic Information] dialog box.

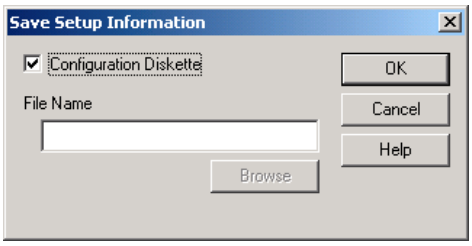


7. Follow the message to specify each item on the dialog box and click [Next].

NOTE: If you click on [Cancel], all the input value will be deleted.

When completing the specification of setup information, the [Save Setup Information] dialog box will appear.

8. Confirm that the [Configuration Diskette] check box is checked, and input file name for the Setup File in [File Name].



9. Insert the floppy disk formatted by 1.44MB into the floppy disk drive and click [OK].

Now [Configuration Diskette] has been created. [Configuration Diskette] is used when you install Windows Server 2003. Put a label and keep it where it will not be lost.

NOTE: For the information on the contents of each specifying item, refer to the Help.

If you want to modify the information file that already exists, click [Modify information files] on Configuration Diskette Creator window. Refer to the Help to modify the inf file.

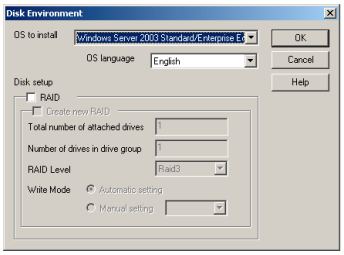
Installing Optional Mass Storage Driver

To install optional Mass Storage Driver that is supported by the Express Setup, follow the procedure below to create [Configuration Diskette].

1. Display Configuration Diskette Creator window.
2. From the [File] menu, click [Create new information files].

   [Disk Environment] dialog box will be displayed.
3. Specify each item and click on [OK].

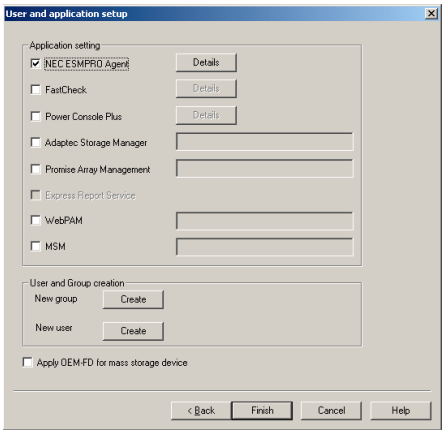
   The dialog boxes to specify setup information will be displayed in order, such as [Disk Environment] dialog box.



4. Follow the message to specify each item on the dialog box and click on [Next].

   NOTE: If you click on [Cancel], all the input value will be deleted.

5. When [User and application setup] is displayed, check [Apply OEM-FD for mass storage device].



6. When the [Save Setup Information] dialog box is displayed, confirm that the [Configuration Diskette] check box is checked, and input file name for the Setup File in [File Name].
7. Insert the floppy disk formatted by 1.44MB into the floppy disk drive and click on [OK].

MegaRAID Storage Manager (Server)

MegaRAID Storage Manager (hereinafter abbreviated to MSM) is an application to manage or monitor the N8103-99 disk array controller (0ch), N8103-90 disk array controller (for external SAS hard disk drives), N8103-91 disk array controller (for internal SAS hard disk drives), or LSI Logic Embedded MegaRAID™. You can use MSM for management of arrays and error notification by event monitoring while the system is running.

Before attempting to operate MSM, read the "MegaRAID Storage Manager User's Guide" contained in NEC EXPRESSBUILDER CD-ROM. The manual explains the MSM installation procedure and notes on operating MSM.

Setup with Express Setup

You can install MSM with Express Setup contained in NEC EXPRESSBUILDER CD-ROM. When you start the Express Setup, a dialog to specify an application appears. Select [MSM] on the dialog.

Manual Setup

See the online document "MegaRAID Storage Manager User's Guide contained in NEC EXPRESSBUILDER CD-ROM for details.

NEC ESMPRO

The NEC ESMPRO lets a system administrator manage remote servers across a network. The NEC ESMPRO monitors server hardware and software configurations, failures, and performance. With log data collected by NEC ESMPRO, a system administrator can track long-term and short-term performance, monitor server usage, create graphs to record trends, and check server failure rates. The administrator can use the information collected to create more efficient data routing procedures and optimize server usage.

Functions and Features

The NEC ESMPRO offers many functions and features for managing remote servers across a network. These features help the system administrator perform daily system operation, system extension, and transfer tasks. Some features of NEC ESMPRO Manager include:

- Hardware and software server configuration
  - Hardware resources mounted in servers, such as the CPU, memory, disks, disk arrays, and LAN boards.
  - Software resources, such as operating system information and drivers running on each server.
- Server failures
  - On-screen real-time displays provide the system administrator with the failure type, location, cause, and suggested corrective action.
  - Failure data includes hardware failure information such as system board temperature, memory failure, crashes, and software failure information.
- Performance
  - NEC ESMPRO monitors server performance and displays server usage on the screen and displays information, such as the rate of CPU load, memory usage, disk usage, and LAN traffic. Usage threshold values can help the system administrator monitor and prevent server overloads.

For installation procedure and detailed explanations on NEC ESMPRO, refer to the online document in the NEC EXPRESSBUILDER CD-ROM.

Power Console Plus

Power Console Plus is a utility to control the RAID system of the disk array controller (MegaRAID controller) produced by LSI Logic. Use of Power Console Plus enables operations (e.g., monitoring and maintenance) of RAID systems that are constructed on local NEC Express servers and NEC Express servers connected through networks (TCP/IP). The operations can be done online on graphical screens without the system being stopped.

Major Functions

Power Console Plus has the following features:

- Supporting the Wizard function to facilitate configuration
- Enabling the change of RAID levels
- Being compatible with SAF-TE
- Supporting the performance monitor
- Supporting enclosure functions such as temperature monitoring, power monitoring, and fan monitoring
- Enabling the settings of Write, Read, and Cache policies for each logical drive
- Supporting the save and restore functions for configuration
- Enabling the display of the SCSI transfer rate

Components

Power Console Plus consists of the following five components:

- SNMP Agent

  This function is not yet supported. Do not install SNMP Agent.

- MegaRAID Service Monitor

  Enables NEC ESMPRO to monitor the MegaRAID controller by registering event logs. Install MegaRAID Service Monitor in the NEC Express server in which the MegaRAID controller is mounted.

- MegaRAID Client

  Controls the RAID system on graphical screens. Install MegaRAID Client in the NEC Express server in which the MegaRAID controller mounted or in the management PC that is connected through the NEC Express server and network.

- MegaRAID Server

  Enables control of the MegaRAID controller via the network. Install MegaRAID Server in the NEC Express server in which the MegaRAID controller mounted.

- MegaRAID Registration Server

  Enables control of the MegaRAID controller via the network. Install in one of NEC Express servers and management PCs that are connected through network. The above components must be installed correctly for establishing the environment to use Power Console Plus.

Power Console Plus components to be installed are different between the target servers and management PC.

- Server:
  NEC Express server in which the MegaRAID controller is mounted

  Install the following three components in this server:

  – MegaRAID Service Monitor

  – MegaRAID Server

  – MegaRAID Client

- Management PC:
  Management PC that monitors and controls servers via the network (TCP/IP)

  When managing array on Terminal Server working on Windows NT Server Version 4.0 Terminal Server Edition, prepare PC, and install Management PC component. Management PC does not guarantee operation on Client, which used Terminal Server, Terminal Server Emulator, WBT.

  Start Power Console Plus of management PC, after the Power On machine that installed "Server" and "Management Server".

  Install the following component in this PC:

  – MegaRAID Client

- Management server:
  Machine that manages all servers that are monitored and controlled by management PCs

  Install the following component in one of the servers or management PCs:

  – MegaRAID Registration Server

Server Setup

This section explains Power Console Plus setup in the NEC Express server in which the MegaRAID controller is mounted.

Operating Environment

This section explains the operating environment required for Power Console Plus to operate on a server.

- Hardware
  - Machine:

    NEC Express5800 series connected with the AMI disk array controller (A)
  - Memory:

    Size large enough for OS operation + 8MB or more
  - Free space of the hard disk drive:

    5MB or more
  - Display unit:

    Screen size 1024 × 768 or larger
  - Required peripheral equipment:

    Network Interface card

    CD-ROM unit

    Pointing device such as a mouse
- Software
  - Microsoft Windows NT version 4.0

    (Windows NT Version 4.0 Service Pack 6a or later + Internet Explorer 5.5 or later)
  - Microsoft Windows 2000

Management PC Setup

This section explains Power Console Plus setup in a computer that manages servers via the network (TCP/IP).

Operating Environment

This section explains the operating environment required for Power Console Plus to operate on a management PC.

- Hardware
  - Machine:

    NEC Express5800 series

    PC/AT-compatible machine (which contains Intel Pentium or a CPU at least equivalent to it)
  - Memory:

    Size large enough for OS operation + 8MB or more
  - Free space of the hard disk drive:

    5 MB or more
  - Display unit:

    Screen size 1024 × 768 or larger
  - Required peripheral equipment:

    Network Interface card

    CD-ROM unit

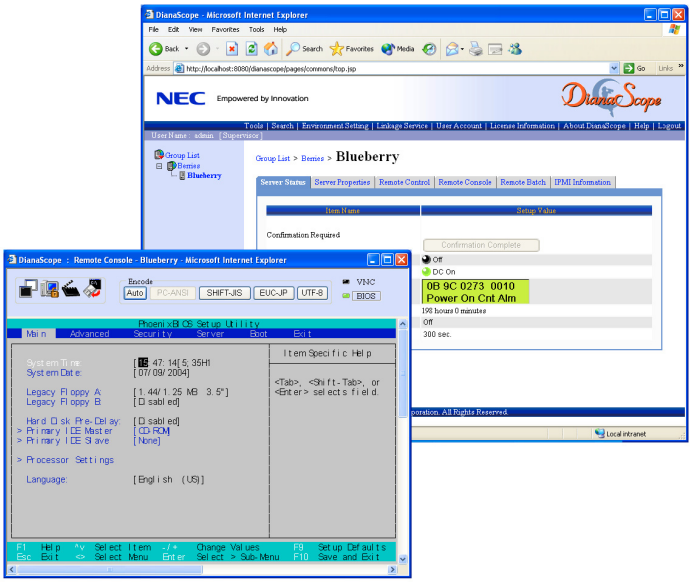
    Pointing device such as a mouse
- Software
  - Microsoft Windows NT Version 4.0

    (Windows NT Version 4.0 Service Pack 5 or later + Internet Explorer 4.01 Service Pack 2 or later)
  - Microsoft Windows 2000
  - Microsoft Windows 95/98/Me

NEC DianaScope

NEC DianaScope is software for the remote management of the server.

See the online documents for details on the functions and installation of NEC DianaScope.



NOTE: You need the server license to activate DianaScope for this product. The server license below is attached to this product.

- DianaScope Additional Server License (1)

Chapter 7

Maintenance

This chapter describes the daily maintenance of the server and precautions when relocating or storing the server.

MAKING BACKUP COPIES

NEC recommends you make backup copies of your valuable data stored in hard disk drives of the server on a regular basis. For backup storage devices suitable for the server and backup tools, consult with your sales agent.

When you have changed the hardware configuration or BIOS configuration, select "System Information Management" and then "Save" of the Off-line Maintenance Utility to make a backup copy of the system information.

Also make a backup copy of the disk array configuration data if your system is in the array configuration. When your hard disk drives have been auto-rebuilt due to a failure, it is recommended to make a backup copy of the configuration data. To make a backup copy of the configuration data, use the configuration utility that is resident in the FLASH memory on the optional disk array controller board. Refer to the manual supplied with the board.

CLEANING

Clean the server on a regular basis to keep the server in a good shape.

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery.
- Disconnect the power plug before working with the server.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Avoid installation in extreme temperature conditions.
- Make sure to complete board installation.
- Protect the unused connectors with the protective cap.

Cleaning the Server

For daily cleaning, wipe the external surfaces of the server with a dry soft cloth. Follow the procedure below if stains remain on the surfaces:

IMPORTANT:

- To avoid altering the material and color of the server, do not use volatile solvents such as thinner and benzene to clean the server.
- The power receptacle, the cables, the connectors on the rear panel of server, and the inside of the server must be kept dry. Do not moisten them with water.

1. Make sure that the server is off-powered (the POWER/SLEEP lamp goes off).
2. Unplug the power cord of the server from a power outlet.
3. Wipe off dust from the power cord plug with a dry cloth.
4. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.
5. Rub off stains on the server with the cloth prepared in Step 4.
6. Soak a soft cloth in water, squeeze it firmly, wipe the server with it once again.
7. Wipe the server with a dry cloth.
8. Wipe off dust from the fan exhaust opening on the rear of the server with a dry cloth.

Cleaning the Interior

One of the most important items in a good maintenance program is regular and thorough cleaning of the interior of the server, especially around the mother board.

Dust buildup inside the server can lead to several problems. As dust acts as a thermal insulator, a buildup can prevent proper system cooling. Excessive heat will shorten the life of server components. Also, dust may contain conductive or corrosive materials that can cause short circuits or corrosion of electrical contacts.

How often you should clean the interior of the server depends on the environment in which it is located. For most office environments, you probably should clean the server every 12 months. For more severe environments, clean the interior every 6 months.

Cleaning the interior of the server entails powering off the server and removing the left side cover. You will need a small vacuum cleaner (with plastic tipped nozzle and electrostatic protection), computer grade canned air, and a small brush for cleaning the interior.

Follow the procedure below to clean the interior of the server.

⚠ WARNING

Unplug all power cords.

Unplug all power cords before performing any maintenance. Voltage is present inside the server and display unit even after the power is turned off. All voltage is removed only when the power cord is unplugged.

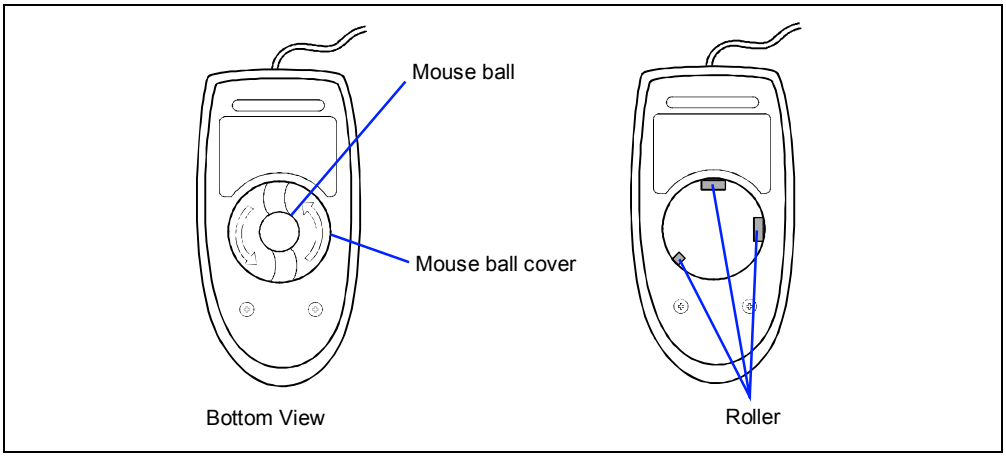
1. Turn off the server and unplug all power cables.
2. Remove the left side cover. (See Chapter 9.)
3. Use a small brush to loosen any dust and debris on the mother board.
4. Use computer grade canned air to blow dust off components on the mother board.
5. Use a small vacuum cleaner with plastic tip to vacuum out dust and debris from the interior of the server.
6. Reinstall the left side cover. (See Chapter 9.)
7. Reconnect all power cables and turn on the server.

Cleaning the Keyboard/Mouse

Make sure that the server and peripheral devices are all off-powered (the POWER/SLEEP lamp goes off), and then wipe the keyboard surface with a dry cloth.

The mouse operation depends on the degree of smoothness of the internal ball rotation. To keep the mouse ball clean, use the mouse in a place with little dust. Follow the steps below to clean the mouse regularly:

1. Prepare cold or lukewarm water, neutral detergent, alcohol, two dry soft clothes, and cotton swabs.
2. Make sure that the server is off-powered (the POWER/SLEEP lamp goes off).
3. Turn the mouse upside down, and rotate the mouse ball cover counterclockwise to remove it.
4. Take out the ball from the mouse. Cover the bottom of the mouse with your hand, and turn your hand holding the mouse (the mouse is on your palm with the button upward). The mouse ball is released onto your palm.



5. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.
6. Rub off stains on the mouse ball. Softly wipe the mouse ball with the cloth prepared in Step 5.
7. Wipe the mouse ball with a dry soft cloth.
8. Wipe three small rollers inside the mouse with a cotton swab soaked with alcohol. Wipe stains slowly and carefully by rotating rollers with the tip of the cotton swab.
9. Blow out any dust from the mouse. Protect your eyes from the dust.
10. Put the mouse ball back into the mouse.
11. Place the mouse ball cover, and rotate it clockwise until it is locked.

Cleaning Disc

A dusty disc or dust-accumulated tray causes the device to fail to read data correctly.

Follow the procedure below to clean the tray and disc regularly:

1. Make sure that the server is powered (the POWER/SLEEP LED is lit).
2. Press the CD tray Open/Close button on the front of the DVD-ROM drive. The tray opens.
3. Hold the disc lightly and take it out from the tray.

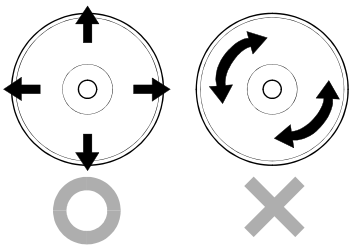
   NOTE: Do not touch the signal side of the disc with your hand.

4. Wipe the tray with a dry soft cloth.

   IMPORTANT: Do not wipe the lens of the DVD-ROM drive. Doing so may damage the lens and may cause a malfunction of the drive.

5. Push on the tray front to close the tray.
6. Wipe the signal side of the disc with a dry soft cloth.

   IMPORTANT: Wipe disc from the center to the outside. Use only disc cleaner if necessary. Cleaning a disc with record spray/cleaner, benzene, or thinner causes damage to the disc contents. At worst, inserting the disc into the server may cause failure.



SYSTEM DIAGNOSTICS

The System Diagnostics runs several tests on the server.

Select [Tools] - [System Diagnostics] in the NEC EXPRESSBUILDER to diagnose the system.

Test Items

The following items are tested in system diagnostics.

- Memory
- CPU cache memory
- Hard disk drive used as a system

IMPORTANT: When executing the system diagnostics, make sure to disconnect the LAN cable. Executing the system diagnostics with the LAN cable connected, the network may be influenced.

NOTE: On checking the hard disk drive, no data is written into the disk.

Startup and Exit of System Diagnostics

There are two ways to diagnose the server: to use the local console (keyboard) of the server itself, and to use the management PC via serial port (remote console).

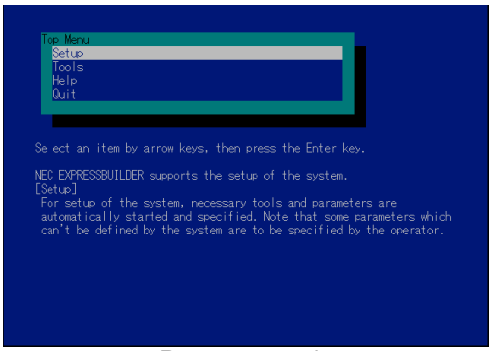
> **IMPORTANT:** Two methods of LAN and the serial port are mentioned in "NEC EXPRESSBUILDER" of Chapter 6 "Installing and Using Utilities" in the way of communicating in remote console.
> Use the serial port to execute System Diagnostics with remote console.
> The LAN connection is not for System Diagnostics.

Procedures to start the diagnostics program are as follows:

1. Shutdown the OS, and power off the server. Then, unplug the power cord.
2. Disconnect all the LAN cables from the server.
3. Plug the power cord and power on the server.
4. Use the NEC EXPRESSBUILDER CD-ROM to start the system.

   The step which the step which local console of the server is used for, and remote console are used for is different. Refer to "NEC EXPRESSBUILDER" of Chapter 6 "Installing and Using Utilities", to start the system properly. The following menu is displayed on the screen, when starting the system from the NEC EXPRESSBUILDER.

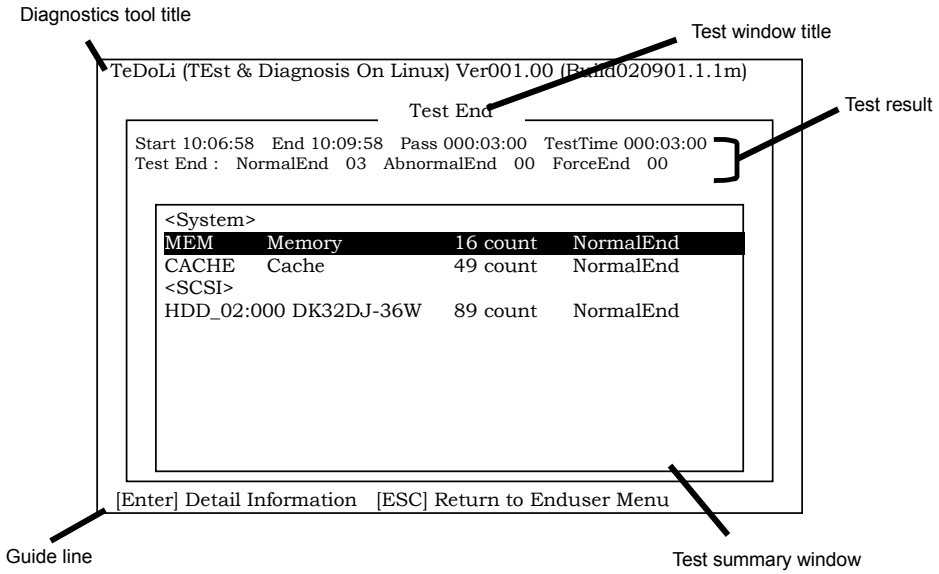
Local console


Top Menu
Setup
Tools
Help
Quit
Select an item by arrow keys, then press the Enter key.
NEC EXPRESSBUILDER supports the setup of the system.
[Setup]
For setup of the system, necessary tools and parameters are automatically started and specified. Note that some parameters which can't be defined by the system are to be specified by the operator.
Remote console

5. Select [Tools].

6. Select [System Diagnostics].

The system diagnostics starts and will be completed in approximately three minutes. When the diagnostics is completed, the screen of the display changes as shown below:


Diagnostics tool title
Test window title
TeDoLi (TEst & Diagnosis On Linux) Ver001.00 (Build020901.1.1m)
Test End
Test result
Start 10:06:58 End 10:09:58 Pass 000:03:00 TestTime 000:03:00
Test End : NormalEnd 03 AbnormalEnd 00 ForceEnd 00
<System>
MEM Memory 16 count NormalEnd
CACHE Cache 49 count NormalEnd
<SCSI>
HDD_02:000 DK32DJ-36W 89 count NormalEnd
[Enter] Detail Information [ESC] Return to Enduser Menu
Guide line
Test summary window

– Diagnostics tool title

  Shows the name and version of the diagnostic tool.

– Test window title

  Shows the progress of the diagnostics. "Test End" is displayed when the diagnostics completes.

– Test result

  Shows the start, end, and elapsed time and completion status of the diagnostics.

– Guide line

  Shows the details of the keys to operate window.

– Test summary window

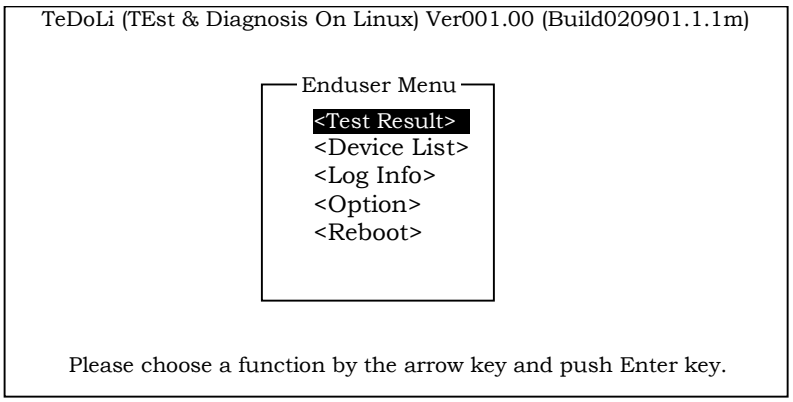
  Shows the results of each test that executed the diagnostics. Move the cursor and press the **Enter** key on the cursor line to display the details of the test.

When an error is detected by the system diagnostics, the relevant test result in the test Summary window is highlighted in red, and "Abnormal End" is displayed in the result on the right side.

Move the cursor to the test that detected the error, and press the **Enter** key. Record the error message that has been output to the Detail Information screen and contact your service representative.

7. Follow the guide line shown at the bottom of the screen, and press the **Esc** key.

   The [Enduser Menu] below is displayed.



<Test Result> Shows the diagnostics completion screen of the above diagnostics.

<Device List> Shows a list of connected devices.

<Log Info> Shows the log information of the diagnostics. It can be saved on a floppy disk.
To save it on a floppy disk, insert a formatted floppy disk to the floppy disk drive, and select <Save(F)>.

<Option> Optional features can be used from this menu.

<Reboot> Reboots the system.

8. Select <Reboot> in the [Enduser Menu] above.

   The server restarts and the system is started from the NEC EXPRESSBUILDER.

9. Exit the NEC EXPRESSBUILDER, and remove the CD-ROM from the DVD-ROM drive.

10. Power off the server and unplug the power cord from the receptacle.

11. Reconnect all the LAN cables that have been disconnected in Step 2. to the server.

12. Plug in the power cord.

This completes the system diagnostics.

RELOCATING/STORING THE SERVER

Follow the procedure below to relocate or store the server:

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- Never attempt to lift the server only by yourself.
- Do not install the server in any place other than specified.
- Do not connect/disconnect any interface cable with the power cord of the server plugged to a power source.

IMPORTANT:

- If the server needs to be relocated/stored due to a change in the floor layout to a great extent, contact the sales agent.
- Make sure to make a backup copy of your valuable data in the hard disk drive, if any.
- Make sure not to apply a shock to hard disk drives to relocated the server if the contains any.

1. Take a media out of the server, if any.
2. Power off the server (the POWER/SLEEP lamp goes off).
3. Unplug the power cord of the server from a power outlet.
4. Remove all the cables from the server.
5. Hold the server by its bottom with at least three persons to carry the server.

IMPORTANT: Do not hold the front door to lift the server. The front door may be disengaged from the server, causing personal injury.

6. Protect the server with the shock-absorbing materials, and pack it securely.

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Chapter 8

Troubleshooting

If your server does not operate as expected, read this chapter before assuming a failure.

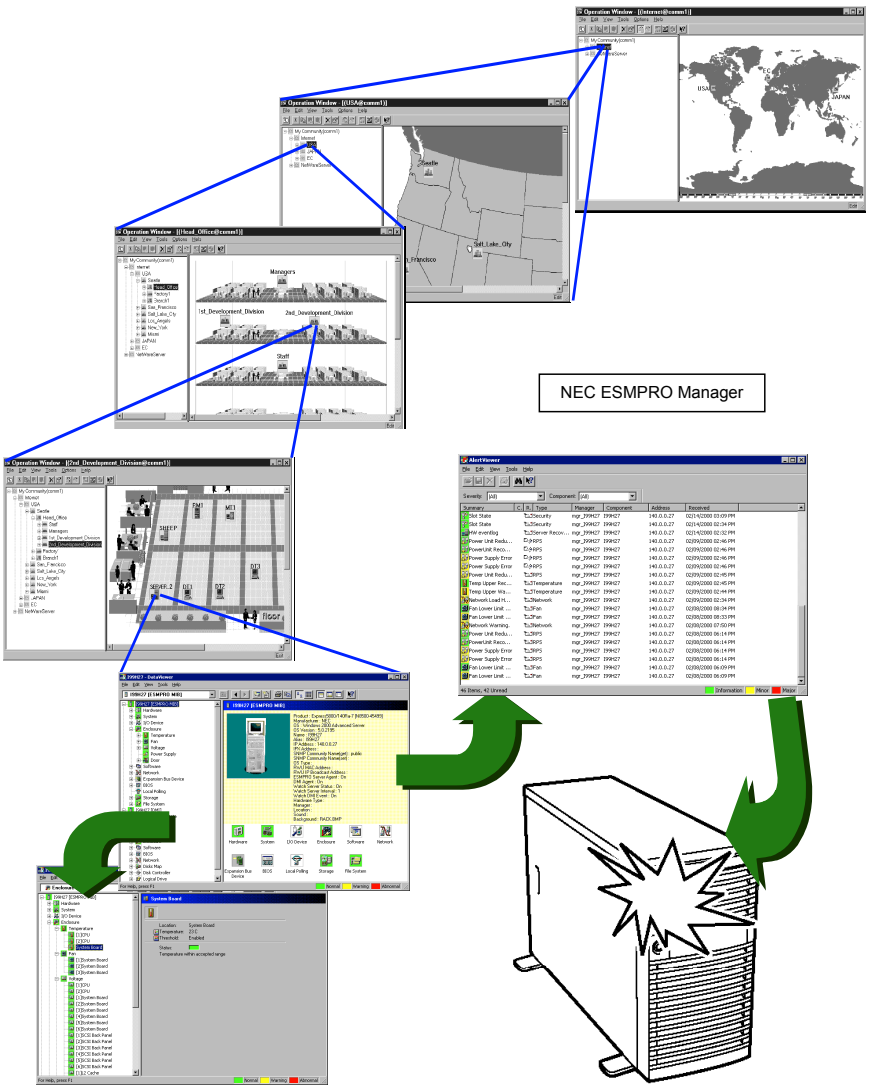
> **NOTE:** For provision against an unexpected failure, it is recommended to install the Off-line Maintenance Utility, NEC ESMPRO, to the server and client computers.

SYSTEM VIEWERS

Monitor the occurrence of fault by NEC ESMPRO during the system operation.

Especially take note on whether any alert is reported to NEC ESMPRO Manager on the management PC. Check whether any alert is reported on the Operation Window, Data Viewer, or Alert Viewer of NEC ESMPRO Manager.

[Example]



LAMPS

The following describes lamps on the server and their indications. See Chapter 2 for each location.

LAN ACCESS Lamp

The LAN ACCESS lamp is lit green when the server is connected to LAN. The lamp flashes while the server is accessed through the LAN (for packet transmission). The numeric next to the icon indicates the number of the network port on the rear panel.

STATUS Lamp

The STATUS lamp stays lit in green when the server is in successful operation. When the STATUS lamp is unlit or lit/flashing in amber, it indicates that the server has failed.

The following table lists indications of the STATUS lamp, descriptions, and actions to take.

NOTES:

- If the server has the NEC ESMPRO or Off-line Maintenance Utility installed, you can view the error log to identify the cause of a trouble.
- To cycle power to the server, shut down the server from the OS to and reboot it, if available. If the shutdown from the OS is not available, disconnect and connect the power cord to reboot the server.

STATUS lamp indication	Description	Procedure
On (green)	The server is operating normally.	–
Flashing (green)	• The server is operating with the memory or CPU in degraded state. • A single-bit memory error has often occurred.	Identify the device in degraded state by using the BIOS setup utility "SETUP," and replace it as soon as possible.
Off	The power is off.	Turn on the power.
	POST is in progress.	Wait for a while. The STATUS lamp turns green when POST is completed.
	A CPU error occurred.	Turn the power off and then turn it on. If the POST screen displays an error message, take notes of the message, and contact your service representative.
	A CPU temperature alarm was detected. (Thermal-Trip)	
	A timeout occurred when the time set for the watchdog timer arrived.	
	A CPU bus error occurred.	
	A memory dump is being requested.	Wait until the memory dump is completed.
On (amber)	A temperature alarm was detected.	Check if the internal fans are clean and if the fan units are firmly connected. If the STATUS lamp indication does not change when the fans are normal, contact your service representative.
	A voltage alarm was detected.	Contact your service representative.
	All the power supply units failed.	
Flashing (amber)	Either of the following was detected in the redundant power configuration: • AC power is not supplied to one of the two power supply units. • Failure of one of the two power supply units	Connect the power cord to supply power. If the power supply unit is faulty, contact your service representative.
	A fan alarm was detected.	Check if the fan units are firmly connected. If the STATUS lamp indication does not change when the fans are normal, contact your service representative.
	A temperature warning was detected.	Check if the internal fans are clean and if the fan units are firmly connected. If the STATUS lamp indication does not change when the fans are normal, contact your service representative.
	A power supply alarm was detected.	Contact your service representative.

POWER/SLEEP Lamp

The green POWER/SLEEP lamp lights to indicate normal operation while the server is powered. When the server is off-powered, the POWER/SLEEP lamp stays unlit.

If the OS supports the power-saving mode, the green lamp flashes while the server is in the power-saving mode. Pressing the POWER switch places the server back in the normal mode.

The power-saving mode is available in Windows Server 2003. Some OS's allow you to set the server to automatically turn in the power-saving mode when no access is made to the server for a certain period of time or to select the power-saving mode with a command.

DISK ACCESS Lamp

The DISK ACCESS lamp indicates the state of hard disk drives in the 3.5-inch hard disk drive bay.

This lamp lights in green every time any of such hard disk drives is accessed.

When the DISK ACCESS lamp is lit in amber, it indicates that a hard disk drive error occurred. To identify a failed hard disk drive, see the lamps provided for each hard disk drive.

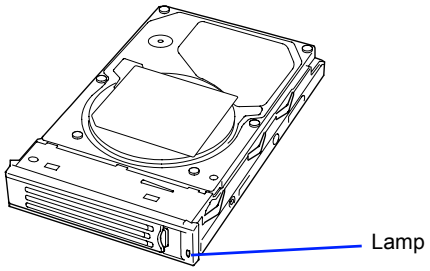
When the DISK ACCESS lamp flashes in green and amber alternately or in amber only, it indicates that hard disk drives connected to the internal disk array controller are in auto-rebuilding (reconfiguration).

Access Lamps

The access lamps for the DVD-ROM drive light when access is made to a media in the drive.

Hard Disk Drive Lamp

The disk lamp on the 3.5-inch hard disk drive bay has different meanings depending on the display status.



- Lighting green
  Indicates that the power is supplied to the hard disk drive.
- Blinking green
  Indicates that the hard disk drive is accessed.
- Lighting amber
  Indicates that the installed hard disk drive is defected in the disk array configuration.

> **NOTE:** While hard disk drives are in the disk array configuration (RAID1 or RAID5), a single failed hard disk drive does not affect the operation of the server. However, it is recommended to replace the failed hard disk drive and auto-rebuild (reconfigure) the hard disk drives as soon as possible. (You can hot-swap such a failed hard disk drive.)

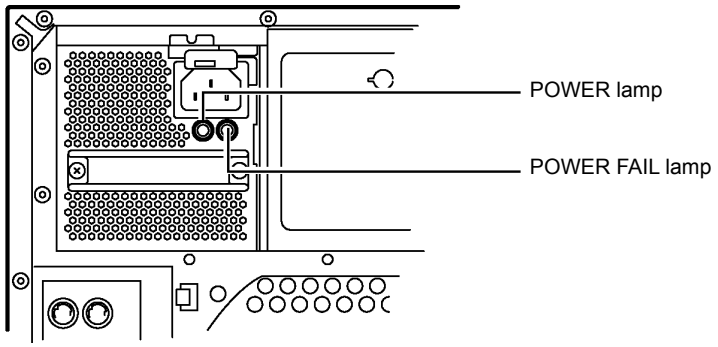
- Alternate lighting green or amber
  Indicates that the hard disk drive is being rebuilt (this status is not a failure). If the defected hard disk drive is replaced with a new one in the disk array configuration, the data is automatically rebuilt (auto rebuild function). During the rebuild process, the lamp is lit green or amber alternately.

  The lamp goes off when the rebuild is completed normally. The lamp goes on amber if the rebuild fails.

> **IMPORTANT:** To abort rebuilding, power off the server. In such a case, restart the server, hot-swap the failed hard disk drive, and restart rebuilding. Observe the following notes to use the auto-rebuild feature.
>
> - Do not power off the server. (If the server is powered off before rebuilding hard disk drives, the auto-rebuild feature will not start.)
> - When you removed a hard disk drive, wait at least 90 seconds before installing the hard disk drive back again.
> - Do not replace another hard disk drive while rebuilding is in progress.

Power Supply Lamps

The power supply on the rear of the server has two lamps.



NOTE: The server equipped with an optional power unit can continue the operation with the normal power unit if the other power unit is defected (redundant function). The defected power unit can be replaced with a new one in the hot-swap mode without power interruption.

POWER lamp

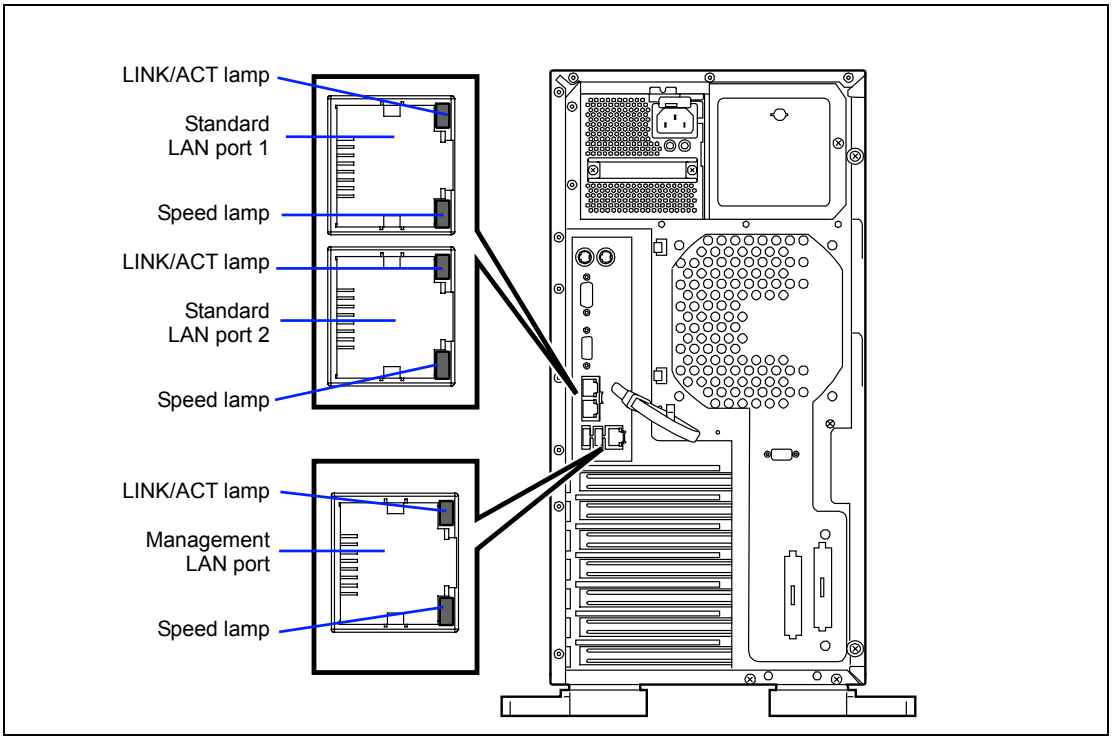
The POWER lamp flashes green if the power supply unit receives the AC power through the power cord (AC ON). The lamp goes on green when you press the POWER switch to power on the server (DC ON).

POWER FAIL lamp

The amber lamp goes on if the power supply unit is fails due to over-current, over-voltage, or fan failure.

LAN Connector Lamps

Each of the three LAN connectors on the rear panel has two lamps as follows.



- LINK/ACT lamp

  Each LINK/ACT lamp indicates the status of the standard network port of the server. While power is supplied to the server and HUB and the connection is correct, the lamp lights green (LINK). The lamp turns green and flashes while the network port is transmitting/receiving data (ACT).

  If the lamp does not go on when the LINK state is placed, check if the network cable is in normal state and if it is connected correctly. If the lamp still does not go on when the network cable is normal, the network (LAN) controller may be faulty. In this case, contact your service representative.

- Speed lamp (for data transmission ports)

  This lamp indicates whether each of the standard network ports is operated through the 1000BASE-T, 100BASE-TX or 10BASE-T network interface. If the lamp is lit amber, the network port is operated through 1000BASE-T. If the lamp is lit green, the network port is operated through 100BASE-TX. If the lamp is off, the network port is operated through 10BASE-T.

- Speed lamp (for management port)

  If the lamp is lit amber, the network port is operated through 100BASE-TX. If the lamp is off, the network port is operated through 10BASE-T.

ERROR MESSAGES

If an error occurs in the server, an error message appears on the display unit connected to the server.

Error Messages after Power-on

Powering on the server automatically starts the self-diagnostic program, POST (Power On Self-Test). When the POST detects any error, it displays an error message and its measure on the display unit.

Follow the table below to troubleshoot such errors. However, even when there is no hardware failure, use of the keyboard or mouse at the following timing causes the POST to assume a keyboard controller error and stop processing.

- Immediately after the server is powered
- Immediately after the system is rebooted in response to a keyboard instruction (simultaneous key entry of **Ctrl** + **Alt** + **Delete**)
- Immediately after the system is rebooted in response to an OS instruction
- During hardware initialization following restart of the POST

When the POST detects a hardware failure due to the above reason, restart the server once again. If the same error message reappears, you may assume there is no hardware error. To ensure normal operation of the server, however, make sure to follow the following restrictions.

- Do not make any keyboard entry or use the mouse before the memory count appears on the screen following the server power-on.
- Do not make any keyboard entry or use the mouse before the start-up message of the Configuration Utility appears on the screen following the server reboot.

> **IMPORTANT:** Take a note on the on-screen message before contacting your service representative. The alarm indication would be a great help for maintenance.

POST Error Messages

When POST detects an error, it displays an error message on the display unit screen. The following table lists error codes, error messages, and actions to take.

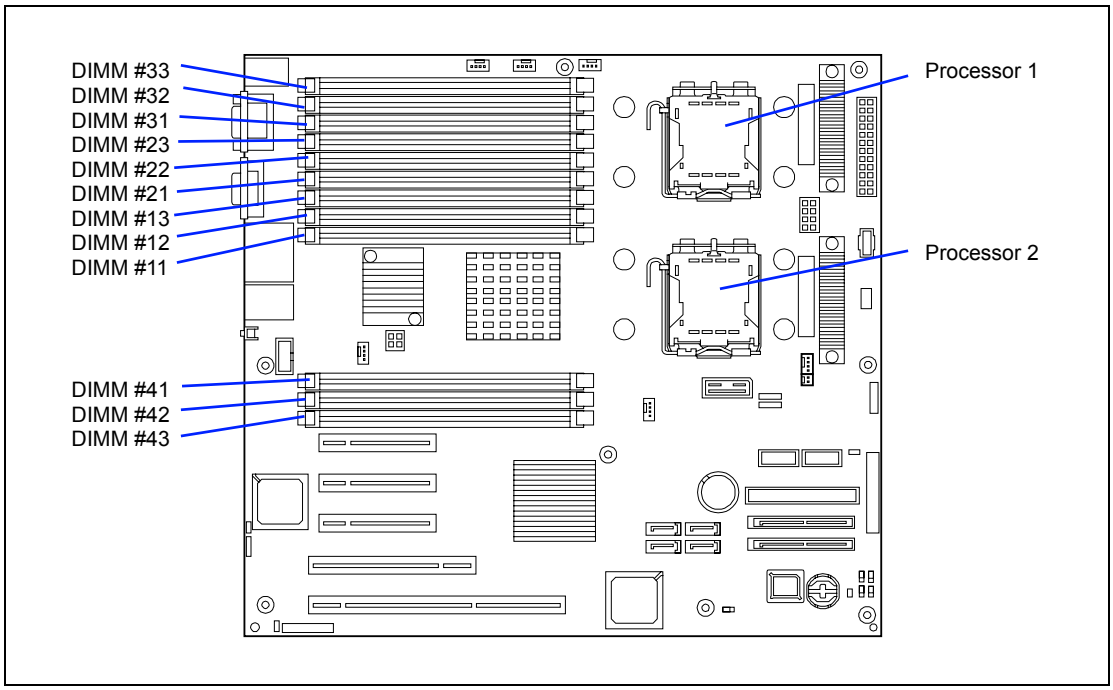
> **IMPORTANT:** Take a note on the messages displayed before consulting with your service representative. Alarm messages are useful information for maintenance.

Error code	Error message	Recommended Action
0200	Failure Fixed Disk.	Contact your service representative.
0210	Stuck Key.	Disconnect the keyboard and connect it again.
0211	Keyboard error	Disconnect the keyboard and connect it again. If the error cannot be corrected, contact your service representative.
0213	Keyboard locked - Unlock key switch.	Release the lock of the key switch. If the error cannot be corrected in spite of the release of the lock, contact your service representative.
0220	Monitor type does not match CMOS - Run SETUP.	Start the SETUP. If the error cannot be corrected in spite of the start of SETUP, contact your service representative.
0230	System RAM Failed at offset.	Contact your service representative.
0231	Shadow Ram Failed at offset.	
0232	Extended RAM Failed at address line.	
0250	System battery is dead - Replace and run SETUP.	Contact your service representative to replace the battery. (After restarting the computer, start the SETUP to provide the setting again.)
0251	System CMOS checksum bad - Default configuration used.	The default values have just been set. Start the SETUP to provide the setting again. If the error cannot be corrected, contact your service representative.
0252	Password checksum bad - Passwords cleared.	The password has just been cleared. Start the SETUP to provide the setting again.
0260	System timer error.	Start the SETUP to set the date and time again. If the same error occurs successively in spite of the resetting, contact your service representative.
0270	Real time clock error.	
0271	Check date and time setting.	
02D0	System cache error - Cache disabled.	The cache cannot be used. Contact your service representative.

Error code	Error message	Recommended Action
02D1	System Memory exceeds the CPU's caching limit.	Contact your service representative.
02F4	EISA CMOS not write able.	
02F5	DMA Test Failed.	
02F6	Software NMI Failed.	
02F7	Fail-safe Timer NMI Failed.	
0B22	CPUs are installed out of order.	Request the maintenance to replace the CPU.
0B28	Unsupported CPU detected on CPU Slot 1.	Make sure that the server supports the CPU. If you are not sure, contact your service representative to request the maintenance.
0B29	Unsupported CPU detected on CPU Slot 2.	
0B30	Fan 1 Alarm occurred.	Contact your service representative to replace the fan.
0B31	Fan 2 Alarm occurred.	
0B32	Fan 3 Alarm occurred.	
0B5F	Forced to use Processor with error	Because an error is detected in every CPU, the system is forcibly started. Contact your service representative.
0B60	DIMM group #1 has been disabled	Contact your service representative.
0B61	DIMM group #2 has been disabled	
0B62	DIMM group #3 has been disabled	
0B63	DIMM group #4 has been disabled	
0B64	DIMM group #5 has been disabled	
0B65	DIMM group #6 has been disabled	
0B70	The error occurred during temperature sensor reading.	Contact your service representative.
0B71	System Temperature out of the range.	Contact your service representative to replace the fan.
0B74	The error occurred during voltage sensor reading.	Contact your service representative.
0B75	System voltage out of the range.	
0B80	BMC Memory Test Failed.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B81	BMC Firmware Code Area CRC check failed.	
0B82	BMC core Hardware failure.	
0B83	BMC 1BF or 0BF check failed.	
0B8A	BMC SEL area full.	Start SETUP and select [Server] - [Event Log Configuration] - [Clear All Error Logs] and press **Enter** to clear event logs.
0B8B	BMC progress check timeout.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B8C	BMC command access failed.	
0B8D	Could not redirect the console - BMC Busy -	
0B8E	Could not redirect the console - BMC Error -	
0B8F	Could not redirect the console - BMC Parameter Error -	
0B90	BMC Platform Information Area corrupted.	
0B91	BMC update firmware corrupted.	

Error code	Error message	Recommended Action
0B92	Internal Use Area of BMC FRU corrupted.	This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B93	BMC SDR Repository empty.	Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B94	IPMB signal lines do not respond.	This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B95	BMC FRU device failure.	This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B96	BMC SDR Repository failure.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B97	BMC SEL device failure.	
0B98	BMC RAM test error.	
0B99	BMC Fatal hardware error.	
0B9A	Management controller not responding.	Update the RMC firmware. If the error cannot be corrected, contact your service representative.
0B9B	Private I2C bus not responding.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B9C	BMC internal exception.	
0B9D	BMC A/D timeout error.	
0B9E	SDR repository corrupt.	
0B9F	SEL corrupt.	
0BB0	SMBIOS – SROM data read error.	Contact your service representative.
0BB1	SMBIOS – SROM data checksum bad.	
8100	Memory Error detected in DIMM group #1.	Contact your service representative to replace the DIMM in the relevant group.
8101	Memory Error detected in DIMM group #2.	
8102	Memory Error detected in DIMM group #3.	
8103	Memory Error detected in DIMM group #4.	
8104	Memory Error detected in DIMM group #5.	
8105	Memory Error detected in DIMM group #6.	
8160	Mismatch Processor Speed detected on Processor 1.	Contact your service representative.
8161	Mismatch Processor Speed detected on Processor 2.	
None	Expansion ROM not initialized – PCI Mass Storage Controller in slot xx (xx: slot number)	Disable initialization of the optional device expansion ROM by using the BIOS SETUP utility (see Chapter 4).
	H/W Configuration of BMC is corrupted. !! Update BMC F/W Configuration by configuration tool !! !! Refer to BMC configuration manual !!	Use the NEC EXPRESSBUILDER to configure the optional remote management card (see Chapter 6).

The following figure shows the socket numbers of the DIMMs and processors referenced in the POST error codes and messages table.



Beep Codes

If an error occurs during the POST, the server beeps, indicating the type of error.

Each number indicates the number of short beeps, and a hyphen indicates a pause. For example, the beep interval 1-3-1-1 indicates 1 beep, pause, 3 beeps, pause, 1 beep, pause, and 1 beep notifying that the DRAM refresh test error occurred.

Beep code	Description	Recommended action
3-3 (repetitive)	ROM checksum error	Contact your service representative to replace the mother board.
1-2-2-3		
1-3-1-1	DRAM refresh test error	Check if the DIMMs are properly connected. If the error persists, contact your service representative to replace DIMM or mother board.
1-3-1-3	Keyboard controller error	Disconnect the keyboard and connect it again. If the error persists, contact your service representative to replace the mother board.
1-3-3-1	No memory or capacity check error	Check if the DIMMs are properly connected. If the error persists, contact your service representative to replace DIMM or mother board.
1-3-4-1	DRAM address error	
1-3-4-3	DRAM test Low Byte error	
1-4-1-1	DRAM test High Byte error	
1-5-1-1	CPU startup error	Contact your service representative to replace the mother board.
1-5-2-1	No CPU installed	Contact your service representative to replace the CPU or mother board.
2-1-2-3	BIOS ROM copyright test error	Contact your service representative to replace the mother board.
2-2-3-1	Unexpected interrupt test error	
1-2	Option ROM initialization error	Check if BIOS SETUP is correctly configured. If an expansion of Option ROM for additionally installed PCI board is not displayed, check if the PCI board is properly installed. If the error persists, contact your service representative to replace the mother board or PCI board.

NOTE: Beep code 1-5-4-2 informs you that AC power supply is interrupted due to power failure or momentary voltage drop and the system is restarted. This is not an error.

SOLVING PROBLEMS

When the server fails to operate as expected, see the following to find out your problem and follow the instruction given before asking for repair.

If the server still fails to operate successfully after solving your problem, take a note on the on-screen message and contact your service representative.

Problems with NEC Express Server

Fail to power on the server:

- ❑ Is the server is properly supplied with power?
  - → Check if the power cord is connected to a power outlet (or UPS) that meets the power specifications for the server.
  - → Make sure to use the power cord provided with the server. Check the power cord for broken shield or bent plugs.
  - → Make sure the power breaker for the connected power outlet is on.
  - → If the power cord is plugged to a UPS, make sure the UPS is powered and it outputs power. See the manual that comes with the UPS for details.

    Power supply to the server may be linked with the connected UPS using the BIOS SETUP utility of the server.

    <Menu to check: [Server] - [AC-LINK]>
- ❑ Did you press the POWER switch?
  - → Press the POWER switch on the front of the server to turn on the power (the POWER/SLEEP lamp lights).

Fail to power off the server:

- ❑ Is the POWER switch enabled?
  - → Restart the server and start the BIOS SETUP utility.

    <Menu to check: [Security] - [Power Switch Inhibit]>

POST fails to complete:

- ❑ Is the DIMM board installed?

  → At least one DIMM board is required for operation.

- ❑ Is the memory size large?

  → The memory check may take a few seconds if the memory size is large. Wait for a while.

- ❑ Did you perform any keyboard or mouse operation immediately after you started the server?

  → If you perform any keyboard or mouse operation immediately after start-up, POST may accidentally detect a keyboard controller error and stops proceeding. In such a case, restart the server once again. Do not perform any keyboard or mouse operation until the BIOS start-up message appears when you restart the server.

- ❑ Does the server have contains appropriate memory boards or PCI devices?

  → Operation of the server with unauthorized devices is not guaranteed.

Fail to access to internal or external devices (or such devices fail to operate):

- ❑ Are cables properly connected?

  → Make sure that the interface cables and power cord are properly connected. Also make sure that the cables are connected in the correct order.

- ❑ Is the power-on order correct?

  → When the server has any external devices connected, power on the external devices first, then the server.

- ❑ Did you install drivers for connected optional devices?

  → Some optional devices require specific device drivers. Refer to the manual that comes with the device to install its driver.

- ❑ Is BIOS configuration correct?

  → Most PCI devices generally do not require any change to the configuration, but some boards do require specific settings. Refer to the manual that comes with the board for details to make correct settings.

  → Some devices connected to the serial, parallel, or USB port may require I/O port address or operation mode settings. Refer to the manual that comes with the board for details to make correct settings.

The keyboard or mouse fails to operate:

- ❑ Is the cable properly connected?
  - → Make sure that the cable is connected to the correct connector on the rear of the server.
  - → The keyboard or mouse does not operate if it is connected when the server is powered (not applicable to USB devices). Power of the server first and connect it properly.
- ❑ Is BIOS configuration correct?
  - → The keyboard and mouse may be disabled with the BIOS SETUP utility of the server. Check the settings with the BIOS SETUP utility.
- ❑ Are the drivers installed?
  - → Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed. (These drivers are installed along with the OS.) Some OS's allow you to change the keyboard and mouse settings. Refer to manual that comes with your OS to check that the keyboard and mouse settings are correct.

Fail to access to the DVD/CD-ROM:

- ❑ Is the DVD/CD-ROM properly set in the DVD-ROM drive tray?
  - → The tray is provided with a holder to secure the disc. Make sure that the disc is placed properly in the holder.
- ❑ Is the DVD/CD-ROM applicable to the server?
  - → The DVD/CD-ROM for Macintosh is not available for use.
  - → For the disk which does not conform to the CD standard, the playback of such a disk with the DVD drive is not guaranteed.

Inserted the correct DVD/CD-ROM but the message like the following is displayed:

```
The CD-ROM is not inserted or the wrong CD-ROM is inserted.
Please insert the correct CD-ROM.
OK
```

- ❑ Is the data side of the disc dirty or injured?
  - → Take the disc out of the DVD-ROM drive, confirm that it is not dirty or injured, reset and click [OK].

Fail to access the hard disk drive:

- ❑ Is the hard disk drive applicable to the server?

  → Operation of any device that is not authorized by NEC is not guaranteed.

- ❑ Is the hard disk drive properly installed?

  → See Chapter 9 for details.

- ❑ Is the hard disk drive properly configured?

  → See Chapter 9 for details.

Fail to access the (internal or external) SCSI devices:

- ❑ Is the SCSI device applicable to the server?

  → Operation of any SCSI device that is not authorized by NEC is not guaranteed.

- ❑ Are the SCSI controllers (including optional controllers) properly configured?

  → Use the BIOS SETUP utility for proper configuration of SCSI devices connected to the SCSI connector on the mother board. When the server has an optional SCSI controller installed and SCSI devices connected to it, use the BIOS SETUP utility that comes with the optional SCSI controller for proper configuration. See the manual that comes with the optional SCSI controller for details.

- ❑ Are SCSI devices properly configured?

  → When the server has external SCSI devices connected, hard disk drive settings, including SCSI ID and terminator, are required. Refer to the manual that comes with the SCSI device for details.

Problems with Windows Server 2003 x64 Editions

There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions.

Source: DCOM
Category: Error
Event ID: 10016
Description: The application-specific permission settings do not grant Local Activation permission for the COM server application with CLSID {555F3418-D99E-4E51-800A-6E89CFD8B1D7} to the user {NT AUTHORITY\LOCAL SERVICE} SID {S-1-5-19}.
This security permission can be modified using the component Services administrative tool.

→ It is not a problem in operating the system.

There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions.

Event Source: Service Control Manager
Event Type: Error
Event ID: 7011
Description: Timeout (30000 milliseconds) waiting for a transaction response from the IMAP4Svc service.

→ When this event is not registered by rebooting the system, it is not a problem in operating the system.

Problems with Windows Server 2003 R2

There are some cases that an event log is registered as follows when you operate Windows Server 2003 R2.

Source: IPMIDRV

Type: Error

Event ID: 1001

Description: The IPMI device driver attempted to determine if the system supported an IPMI BMC device. The driver attempted to detect the presence of the IPMI BMC by searching the SMBIOS for Type 38 record. But either no record was found or the record was not compatible with the version of the device driver.
If a SMBIOS Type 38 record was detected, the Dump Data field of the event contains a binary representation of the record.

→ If you use "Hardware Management" which is provided by Windows Server 2003 R2, above-shown event log will be registered.

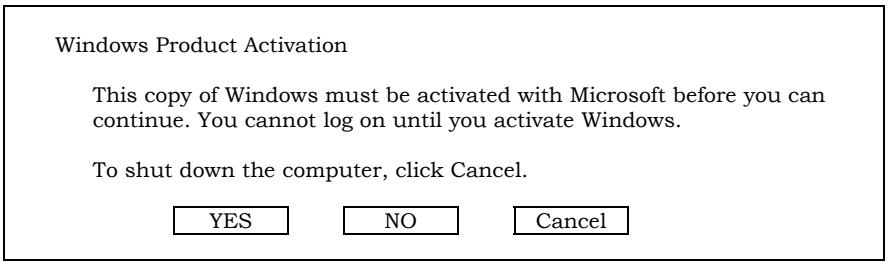
For more details, refer to "Enabling Microsoft Windows Server 2003 R2 Hardware Management" on the following site.

[NEC Express5800 Web Site]

http://www.nec.co.jp/express/download/W2K3_R2

Problems with Windows Server 2003

The system displays the message below and fails to log on.


Windows Product Activation
This copy of Windows must be activated with Microsoft before you can continue. You cannot log on until you activate Windows.
To shut down the computer, click Cancel.
YES
NO
Cancel

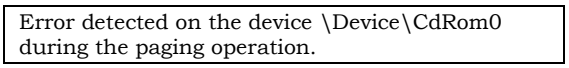
→ In Windows Server 2003, the above message will be displayed if you use the operating system without executing the license authentication. Select "Yes", and execute the procedure for license authentication.

Cannot install the operating system correctly.

❑ Did you confirm the notes on installing the operating system?

→ See Chapter 6.

During installation, the following warning is registered in the System Log of the Event Viewer:



→ There is no problem on this issue.

Fail to start the OS:

❑ Is the NEC EXPRESSBUILDER CD-ROM in the DVD-ROM drive?

→ Take out the NEC EXPRESSBUILDER CD-ROM and restart the server.

❑ Is the OS broken?

→ Use recovery process to recover the system.

The OS presents unstable operation:

❑ Did you update the system?

→ Installing a network drive after installation of the OS may cause unstable operation. Use the NEC EXPRESSBUILDER CD-ROM to update the system. (See Chapter 6.)

The system does not restart automatically when a stop error occurs, though the system is adjusted to automatically restarting:

→ When the system does not restart automatically, restart it manually.

The system restarts automatically when a stop error occurs, though the system is NOT adjusted to automatically restarting:

→ There is no problem about this issue.
Check the System Event Log to confirm that STOP error occurred.

Cannot turn the power OFF at the blue screen:

→ If you want to turn off the power at the blue screen, execute forced shutdown (forced shutdown: continue to press POWER/SLEEP switch for 4 seconds). The power will not be turned off if you press the switch for less than 3 seconds.

The PXE boot (network boot) fails or the server is not found on the network:

- ❑ Is the cable connected properly?
  → Connect the proper cable to the network port on the rear of the Express server. In addition, make sure that the used cable conforms to the network interface standard.
- ❑ Is BIOS configuration correct?
  → The internal LAN controller may be disabled with the BIOS Setup utility of the server. Check the setting with the BIOS setup utility.
- ❑ Have the protocol and service already configured?
  → Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.
- ❑ Is the transfer speed correct?
  → Open the network property dialog box in control panel to specify the link speed and duplex value the same as the value specified for HUB.

The Telnet Service is not installed.

→ Adjust the computer name to 14 characters or less, and then install the Telnet Service according to <How to install the Telnet Service>.

<How to install the Telnet Service>

1. Click [Run] on Start menu.
2. Type "tlntsvr /service" in the [Open] box, and click [OK].
3. Click Start menu, point to [Control Panel] and click [Computer Management] and then click the [Services] to specify whether the Telnet Service is registered.
   * When the installation of Telnet Service is finished, there is no problem if the computer name is set to 15 characters or more.

Problems with NEC EXPRESSBUILDER

When the server is not booted from the NEC EXPRESSBUILDER CD-ROM, check the following:

- ❑ Did you set the NEC EXPRESSBUILDER during POST and restart the server?

  → If you do not set the NEC EXPRESSBUILDER during POST and restart the server, an error message will appear or the OS will boot.

- ❑ Is BIOS configuration correct?

  → The boot device order may be specified with the BIOS SETUP utility of the server. Use the BIOS SETUP utility to change the boot device order to boot the system from the DVD-ROM drive first.

  <Menu to check: [Boot]>

- ❑ Is an error message appeared?

  → When an error occurs while the NEC EXPRESSBUILDER is in progress, the following message appears. After this message appears, check the error and take the appropriate corrective action according to the message listed in the table below.

Message	Cause and Remedy
This machine is not supported.	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
NvRAM access error	An access to the nonvolatile memory (NvRAM) is not acceptable.
Hard disk drive access error	The hard disk drive is not connected or it is failed. Check whether the hard disk drive is correctly connected.
The system-specific information does not exist on the baseboard. Please restore the backup data or write the data by using [System Information Management] of the Off-line Maintenance Utility. Only the authorized personnel are allowed to do this operation.	The system-specific information can't be acquired in the mother board exchange and so on.

Problems with Express Setup

Express Setup can not be used

→ Express Setup does not support the installation of Microsoft Windows Server 2003 x64 Editions.
If you want to perform re-setup, see Appendix D and perform "Manual Setup".

Following message appeared when you tried to install Express Setup to the hard disk drive that has smaller capacity than the specified partition size:

```
The specified partition size has exceeded the capacity of the hard disk.
The setup created the partition at the maximum size that can be reserved on the hard disk.
Setup will continue the process.
OK
```

→ It is not an abnormal condition. Press **Enter** to continue the installation.

The message can not be displayed correctly when copying the files from CD-ROM or checking CD-ROM:

→ Press **R**. When the message appears again even if you press **R**, restart the Express Setup from the beginning. In case the same result occurred after the restart of installation, contact Maintenance Service Company and ask them to check the DVD-ROM drive.

Express Setup terminated and asks to input setup information.

→ There are some errors on the specified setup information.
Follow the instruction to input the correct value. It is not necessary to cancel the installation.

[OK] appears on the [Role of Computer] screen.

→ If you click [OK] here, the setup will select the default value of Express Setup for the later specification to continue the process.

<The Default Value for Windows Server 2003>

The specification of network protocol

Protocol :	TCP/IP [DHCP Specified]
Service :	Select sharing Microsoft network files and printer.
Client :	Microsoft network client
Component :	SNMP
Application :	NEC ESMPRO Agent
	MegaRAID Storage Manager (When disk array system)
	Power Console Plus (When disk array system)

[OK] does not appear on [Role of Computer] screen.

→ The [OK] does not appear if the Setup File that has already been created is loaded.

→ [OK] appears only when you first entered the [Role of Computer] screen. Once you go to the next screen from [Role of Computer], the [OK] will not appear even if you click [Back] to go back to the [Role of Computer] screen.

Select [Use Existing Partition] at [System Partition], but the OS is installed in the whole area of the disk.

→ Is there any other partition than the partition to re-use (excluding maintenance area)? If the partition other than the one to re-use does not exist, the setup will reserve the whole area of the disk to install operating system.

Specified to join the Domain, but the system is installed as Workgroup.

→ When the setup fails to join the Domain during the installation, it will install the system as Workgroup. Open [System] in Control Panel to specify joining the Domain.

Entered the incorrect Product ID/CD key.

→ Even if you entered the incorrect Product ID/CD key, Express Setup will start. However, the setup will stop and asks you to re-enter the correct value. Also in this case, input request will occur when rebooting after GUI setup completed during Express Setup. If these 2 inputs are done correctly, there is no problem on Windows setup.

Unable to specify the details of Network adapter.

→ In Express Setup, you can not specify the details of Network adapter. Specify them from Control Panel after starting Windows.

Connected more than two Network adapter and specified different protocol for each adapter, but all the protocols are specified on either adapter.

→ It's a design. Each adapter is specified so that all the installed protocols can be used. The value that can not be specified during Express Setup will all be specified by default value.

When more than two Network adapter are specified, the detailed specification of TCP/IP protocol are all set to use DHCP.

→ When more than two Network adapter are specified, the detailed specification of the protocol may all be set by default value. Re-specify the details from Control Panel.

Not more than two Network adapter is connected, but the detailed specification of the protocol are all set by default.(e.g. Specified IP Address on TCP/IP, but DHCP is specified)

→ Are you specifying more than two protocols?
In this case, the situation will be the same as connecting more than two Network adapter, so the detailed specification of the protocol are all set by default.
Re-specify the details from Control Panel after starting the OS.

Problems with Disk Array Configuration

Refer to the manual supplied with the RAID controller.

Problems with Master Control Menu

The master control menu fails to appear:

- ❑ Is your system Windows NT 4.0 or later, or Windows 95 or later?

  → The menu is only able to run on Windows NT 4.0 (or later) or Windows 95 (or later).

- ❑ Is **Shift** pressed?

  → Setting the CD-ROM with **Shift** pressed down cancels the Autorun feature.

- ❑ Is the system in the proper state?

  → The menu may not appear depending on the system registry setting or the timing to set the CD-ROM. In such a case, start the Explorer and run \MC\1ST.EXE (or 1ST_X64.EXE : when using the x64 Edition) in the CD-ROM.

Collecting Event Log

This section describes on how to collect the log of various events that occurred on the server.

> **IMPORTANT:** If STOP error, system error, or stall occurred, follow the procedure below after restarting the system.

4. Click [Management Tool] → [Event Viewer] from the Control Panel.
5. Select the type of the log to collect.

   On [Application Log], the events related to the running application is archived. On [Security Log], the events related to the security is archived. On [System Log], the events occurred at the item which configures Windows system is archived.
6. Click [Save as...] in the [Run] menu.
7. Input the file name of archived log in the [File Name] box.
8. Select the type of the log file you want to save in the [File Type] list box and click [OK].

For more information, refer to Windows Online Help.

Collect Configuration Information

Use the "Diagnostic Program" to collect the information on hardware configuration and inside specification. Refer to Windows online help for details.

> **IMPORTANT:** If STOP error, system error, or stall occurred, follow the procedure below after restarting the system.

Collecting Dr. Watson Diagnostic Information

Dr. Watson collects diagnostic information related to application errors. The location to save the information can be specified as you like. For more information, refer to Chapter 5.

Memory Dump

If an error occurs, the dump file should be saved to acquire necessary information.

If you saved the dump to DAT, write down that it is saved as "NTBackup" or "ARCServe" on the label. You can specify the location to save the diagnostic information as you like.. For more information, refer to "Specifying Memory Dump (Debug Information (refer to Chapter 5 for detail)".

IMPORTANT:

- Consult with your service representative before dumping the memory. Dumping the memory while the server is in the successful operation may affect the system operation.
- Restarting the system due to an error may display a message indicating insufficient virtual memory. Ignore this message and proceed. Restarting the system may result in dumping improper data.

Preparing for Memory Dumping

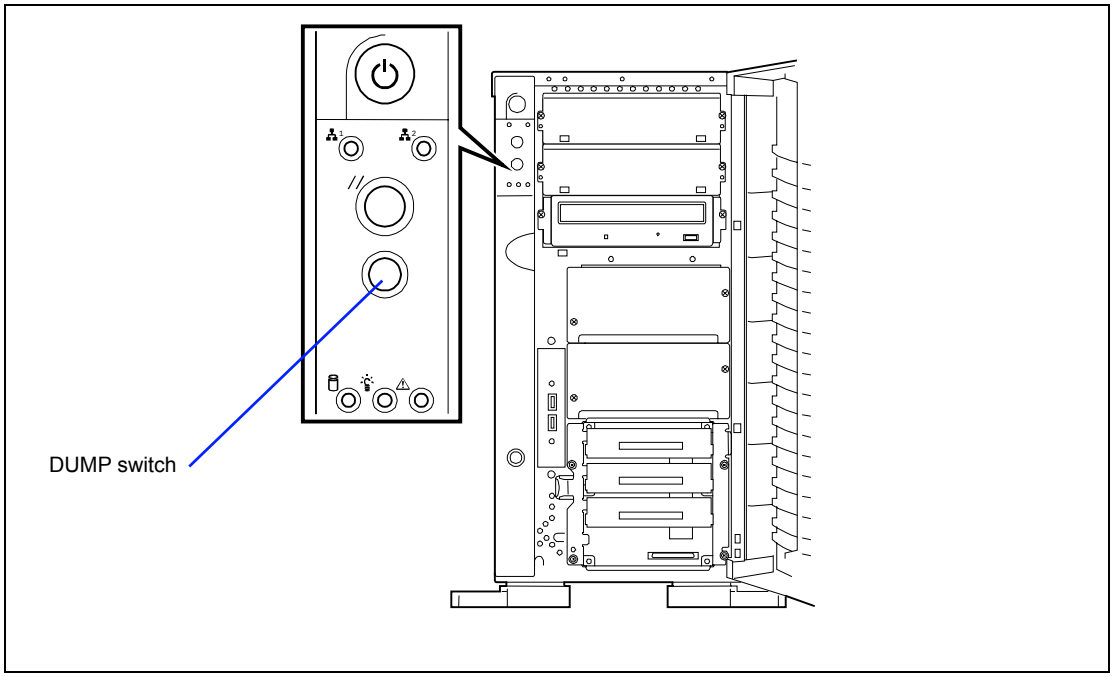
Memory dumping with the DUMP switch may disable the server to restart. In such a case, it is required to force the server to shut down. This forced shutdown, however, is not available if "Enable" is selected for "Power Switch Inhibit" on the Security menu of the BIOS setup utility, SETUP, because this setting disables POWER switch operation.

Follow the procedure below to change the setting to enable the forced shutdown and restart of the server.

1. Power on the server and start the BIOS setup utility, SETUP.
2. Select "Disable" for "Power Switch Inhibit" in the Security menu.
3. Save the configuration data and exit the SETUP.

Saving the Dump File

Press the DUMP switch to save the dump file when an error occurs. Insert a metal pin (a straightened large paper clip will make a substitute) into the switch hole to press the DUMP switch.



Pressing the DUMP switch saves the dump file in the specified directory. (Memory dumping may not be available when the CPU stalls.)

OFF-LINE MAINTENANCE UTILITY

The Off-line Maintenance Utility is an OS-independent maintenance program. When you are unable to start the OS-dependent NEC ESMPRO to troubleshoot a problem, the Off-line Maintenance Utility can be used.

IMPORTANT:

- The Off-line Maintenance Utility is intended for use of your service representative. The NEC EXPRESSBUILDER CD-ROM and the Off-line Maintenance Utility Bootable FD you have created contain a file that describes operation of the utility, but do not attempt to use the utility by yourself. Contact your service representative and follow instructions.
- Starting the Off-line Maintenance Utility disables any access from a client to the server.

Starting the Off-line Maintenance Utility

The Off-line Maintenance Utility may be started in the following ways.

- From the CD-ROM

  Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive and reboot the system.

  After the menu is displayed on the screen, select [Tools] - [Off-line Maintenance Utility].

  The Off-line Maintenance Utility program starts from the CD-ROM.

- From the floppy disk

  Insert the Off-line Maintenance Utility Bootable FD into the floppy disk drive and reboot the system.

  The Off-line Maintenance Utility program starts from the boot disk.

  The Off-line Maintenance Utility Bootable FD is created by selecting "Tools" - "Create Support FD" on the NEC EXPRESSBUILDER.

- Manual start (by pressing **F4**)

  When the Off-line Maintenance Utility is installed, press **F4** while the start-up screen of the server is on screen. The Off-line Maintenance Utility starts from the hard disk drive.

Features of Off-line Maintenance Utility

The Off-line Maintenance Utility provides the following features. (Available features vary depending on the way you started the Off-line Maintenance Utility.)

> **IMPORTANT:** See the on-line help for details of the Off-line Maintenance Utility. For further information, ask your service representative.

- IPMI Information Viewer

  Provides the functions to view the system event log (SEL), sensor data record (SDR), and field replaceable unit (FRU) and to make a backup copy of them. Using this feature, you can find system errors and events to determine a maintenance part.

- BIOS Setup Viewer

  Provides the functions to export the current configuration data defined with the SETUP utility to a text file.

- System Information Viewer

  Provides the functions to view information on the processor and the BIOS and export it to a text file.

- System Information Management

  Provides the function to make a back-up copy of your data.

  Without the backup data, the system-specific information and/or configuration may not be restored.

  Only the authorized personnel is allowed to restore the backup data.

- Start of Utilities

  With the NEC EXPRESSBUILDER, you can start the following utilities installed in the maintenance partition.

  – System Management

  – System Diagnostics

  – Maintenance Partition Update

RESETTING THE SERVER

There are two ways to reset the server.

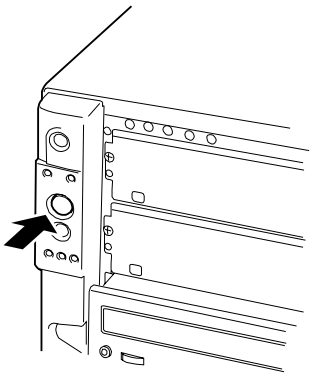
IMPORTANT: Resetting the server clears the DIMM memory and the data in process. To reset the server when it is not frozen, make sure that no processing is in progress.

- Soft reset

  If the server halts before starting the OS, press and hold **Ctrl** and **Alt** and press **Delete**. This restarts the server.

- Hard reset

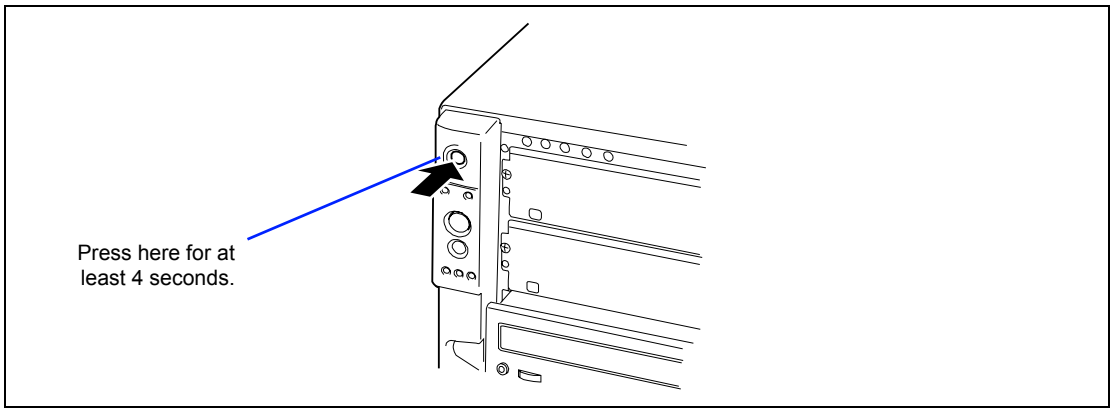
  Press the RESET switch at the front of the server.



FORCED SHUTDOWN

Use this function when an OS command does not shut down the server, the POWER switch does not turn off the server, or resetting does not work.

Press and hold the POWER switch on the server for at least four seconds. The power is forcibly turned off. To turn on the power back again, wait approximately 10 seconds after turning off the power (forced shutdown).



IMPORTANT: If the remote power-on function is used, cycle the power once to load the OS, and turn off the power again in the normal way.

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Chapter 9

Upgrading Your Server

This chapter describes internal optional devices available for the server, procedures for install or removing such optional devices, and notes on using them.

IMPORTANT:

- You may conduct the installation and removal procedures described in this section by yourself. However, NEC is not responsible for any machine or component defects or bad influences resulting from the operation of the server subject to the installation or removal. NEC recommends that you request a maintenance engineer of your service representative having the expert knowledge on the server to do the installation and removal procedures.
- Use the options and cables approved by NEC. You will be charged by any repair of a malfunction, fault, or defect occurring in a server in which one or more component not approved by NEC are used.
- Always update the system if the hardware configuration is changed (See Chapter 5 for details).

SAFETY NOTES

Observe the following notes to install or remove optional devices safely and properly.

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium or battery.
- Disconnect the power plug before working with the server.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-8 for details.

- High temperature
- Make sure to complete board installation.
- Protect the unused connectors with the protective cap.

STATIC PRECAUTIONS

An electrostatic discharge (ESD) can damage disk drives, option boards, and other components. Electronic device can be easily damaged by static electricity. To prevent damage, observe the following information.

- Wear a wrist strap (an arm belt or anti-static glove).

  Wear a wrist strap on your wrist. If no wrist strap is available, touch an unpainted metal part of the cabinet before touching a component to discharge static electricity from your body.

  Touch a metal part regularly when working with components to discharge static electricity.

- Select a suitable work space.
  - Work with the server on the anti-static or concrete floor.
  - When you work with the server on a carpet where static electricity is likely to be generated, make sure take anti-static measures beforehand.
- Use a work table.

  Place the server on an anti-static mat to work with it.

- Clothe
  - Do not wear a wool or synthetic cloth to work with the server.
  - Wear anti-static shoes to work with the server.
  - Take off any jewels (a ring, bracelet, or wrist watch) before working with the server.
- Handling of components
  - Keep any component in an anti-static bag until you actually install it to the server.
  - Hold a component by its edge to avoid touching any terminals or components.
  - To store or carry any component, place it in an anti-static bag.

CONFIRMATION AFTER INSTALLATION/REMOVAL

Confirm the following after installing an additional option and removing a component:

- Installing removed components exactly as they were

  Install the components and cables, which were removed and disconnected for addition of an option, exactly as they were. Assembling without a component being installed or a cable being disconnected causes the server to malfunction.

- Confirming that no parts such as screws are left in the server

  Confirm that particularly conductive parts such as screws are not left in the server. Turning on the power with a conductive part on the mother board or cable terminal causes the server to malfunction.

- Confirming the cooling effect in the server

  Confirm that the ventilating holes are not covered with an internally connected cable. Insufficient cooling effect raises the internal temperature, which causes the server to malfunction.

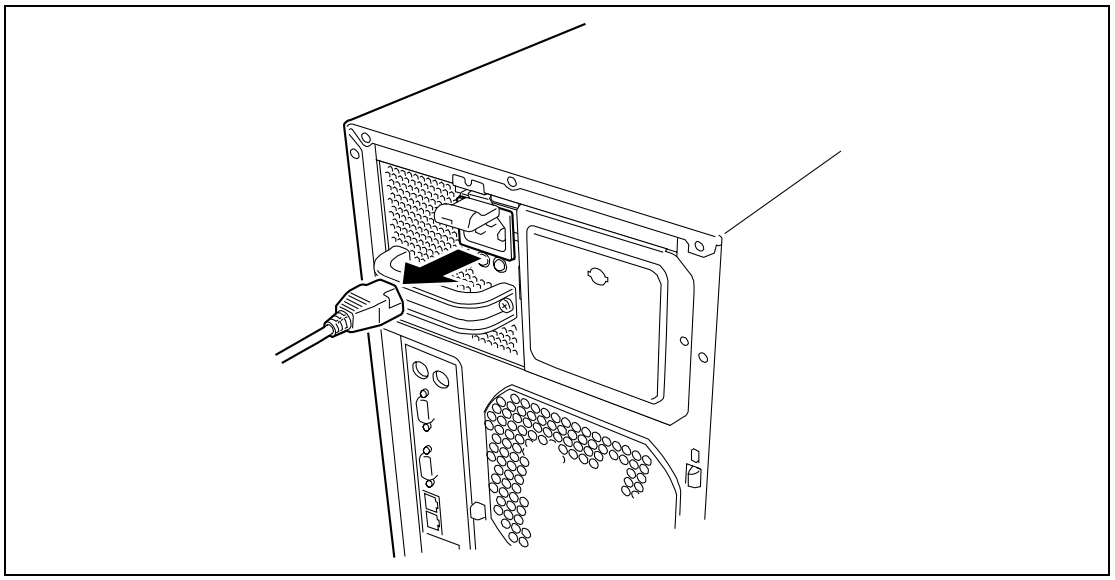
- Confirming operation with a tool

  Some additional devices require the diagnostic utility or BIOS SETUP utility to check if they are installed correctly. For details, see the procedure for additionally installing the target device.

PREPARING FOR INSTALLATION AND REMOVAL

Prepare the installation or removal of a component depending on the following procedure:

1. Shut down the OS.
2. Press the POWER switch to turn off the power of the server. (The POWER/SLEEP lamp goes off.)
3. Pull out all the power cords from the AC inlet on the server.



4. Remove all the cables connected to the server on the rear panel.
5. Make the clearance of 1 m to 2 m in the front and rear sides and left and right sides of the server.

DEVICE INSTALLATION OR REMOVAL PROCEDURE

Install or remove a component from the server in the following procedure.

Side Cover

The left side cover should be removed to access to built-in devices and/or mother board in the server. It is not necessary to remove the right side cover.

Removal

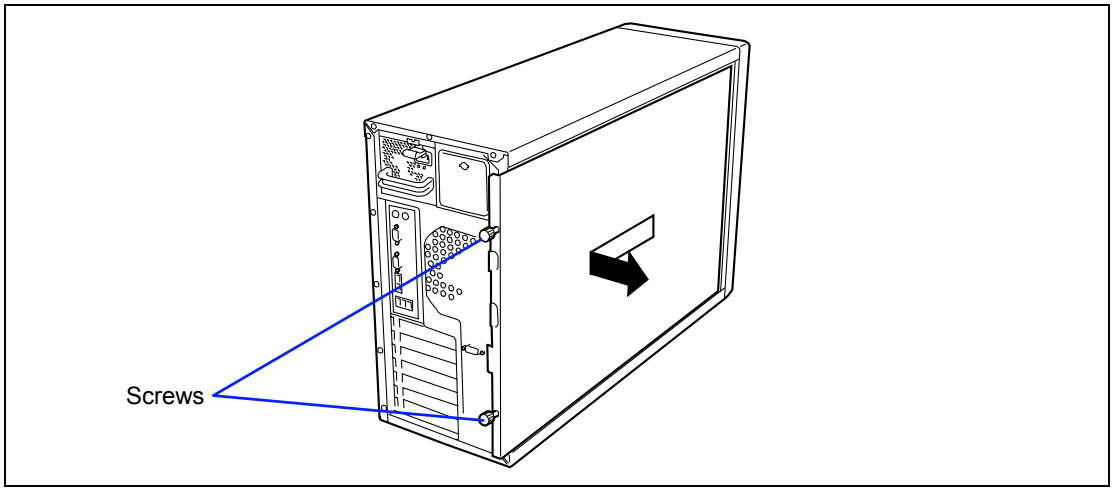
Remove the left side cover in the following procedure.

WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Disconnect the power plug before working with the server.

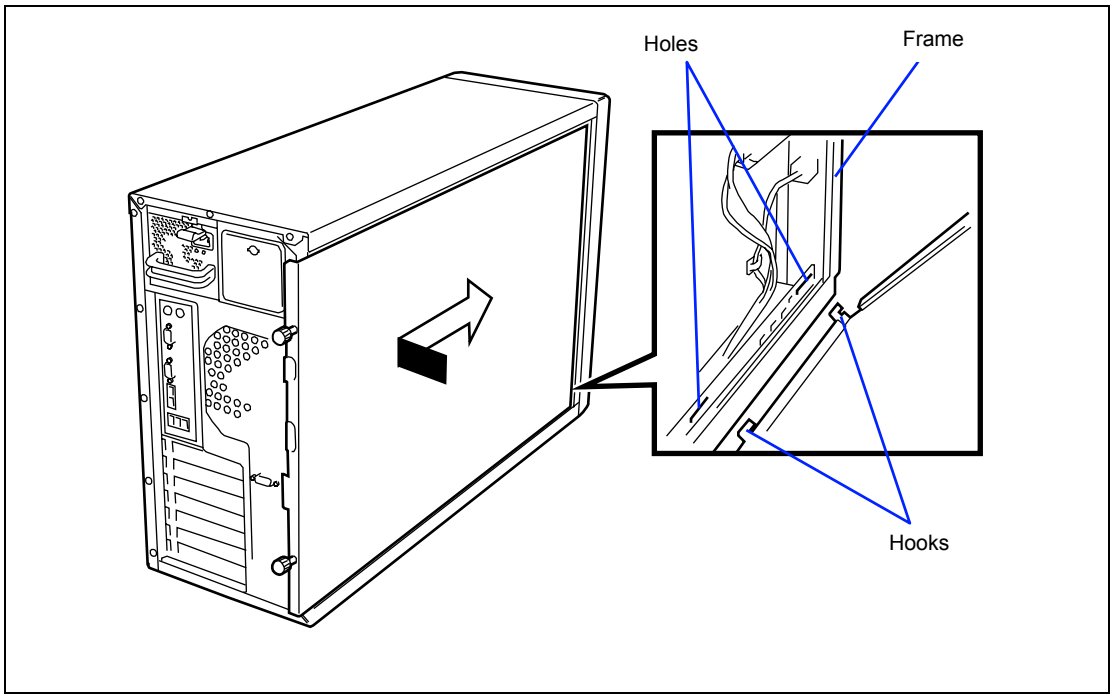
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Loosen the two screws.
3. Slide the cover backward a little.
4. Hold the side cover securely to remove it.



Installation

The side cover can be installed in the reverse procedure of the removal. Make sure that the hooks on the side cover are inserted into the frames and holes of the server securely.

IMPORTANT: After one or more optional devices are installed or removed completely, install the removed side cover securely. The installation of the left side cover is monitored by a cover sensor.



CPU Duct Cover

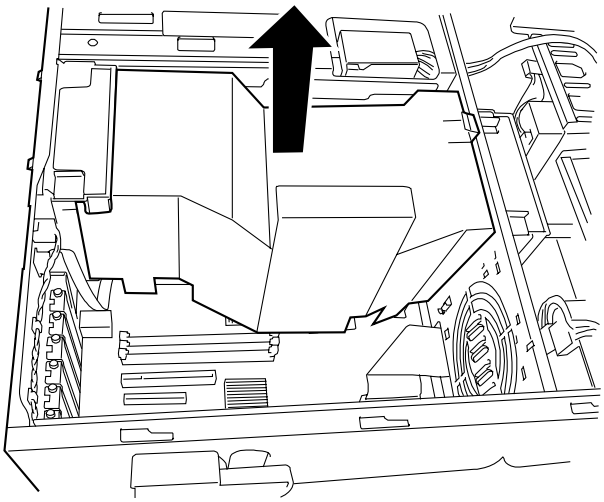
To install or remove the DIMM or processor, you will need to remove the CPU duct cover.

> **IMPORTANT:** Do not assemble the server without installing the CPU duct cover. No duct cover installed in the system reduces cooling efficiency and can affect performance or cause damage due to overheating.

Removal

Follow these steps to remove the CPU duct cover.

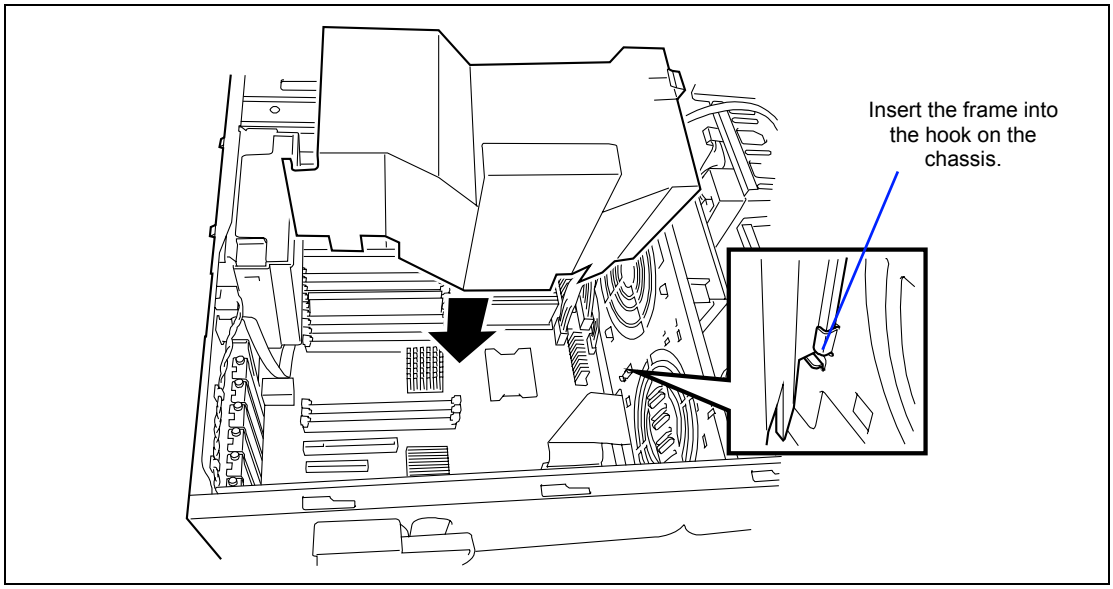
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the side cover.
3. Position the server unit so that its right side faces the floor.
4. Hold the left side of the CPU duct cover, and push the right end of the tab to release from the chassis.
5. Remove the duct from the chassis.



Installation

Follow these steps to install the CPU duct cover.

1. Holding the internal cables clear, place the CPU duct cover into the chassis.
2. Adjust the CPU duct cover until the tab on the right end of the duct cover is aligned with the slot on the chassis.



3. Reinstall the side cover.

3.5-inch Hard Disk Drive

The 3.5-inch hard disk drive bay on the front of the server contains four slots on which hard disk drives can be installed. The drive bay is not equipped with any hard disk drives. Purchase the hard disks additionally if required.

IMPORTANT:

- Do not use any hard disks not approved by NEC. If an unapproved third party's hard disk is installed in the server, not only the hard disk drive but also the server itself may be defected. Purchase hard disk drives of the following models:

  – N8150-199F (36.3GB, 15,000 rpm, SAS)

  – N8150-200F (73.2GB, 15,000 rpm, SAS)

  – N8150-201F (146.5GB, 15,000 rpm, SAS)

- For the disk array configuration, refer to the manual that comes with the disk array controller.

A hard disk drive having the thickness of 1 inch can be installed on each of the slots. The SCSI IDs of the slots are fixed to ID0 to ID3 from bottom to top.

In the configuration at the shipment, the cable on the 3.5-inch hard disk drive bay is connected to the SAS connector on the mother board.

To provide the disk array configuration, connect the cable on the 3.5-inch hard disk drive bay to the disk array controller. The SCSI standard of the hard disk drive to be added should be the same as that of the existing disks.

A dummy tray is installed in an empty slot of the 3.5-inch hard disk drive bay. This is intended to improve the cooling effect within the server. Always install a dummy tray in any slot in which a hard disk drive is not installed.

IMPORTANT: A specified dummy tray must be used.

Installation

Install a hard disk drive in the following procedure. A hard disk drive may be installed in any other slot in the similar procedure.

IMPORTANT:

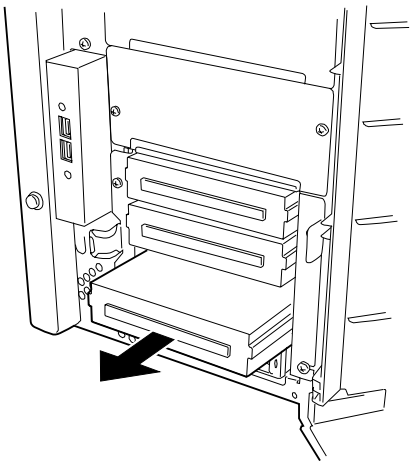
- Fill the bays bottom-to-top.
- In the disk array configuration, hard disk drives configuring a specific pack should have the same specification including the capacity.

NOTE: Hard disk drives can be installed or removed from the server only by opening the front door. In the disk array configuration, hard disk drives may be installed or removed with the power of the server being on.

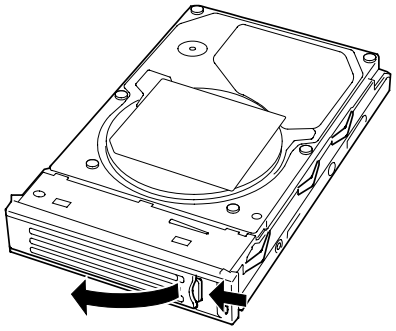
1. See the section "Preparing for Installation and Removal" described earlier to prepare (in other than the disk array configuration).
2. Release the lock of the front door by using the security key to open the front door.
3. Locate the slot in which the hard disk drive is installed.

   There are four slots. The SCSI IDs are defined depending on the locations of the slots (SCSI ID0 to SCSI ID3 from bottom to top).
4. Hold the handle of the dummy tray and remove the dummy tray.

IMPORTANT: Keep the dummy tray carefully.



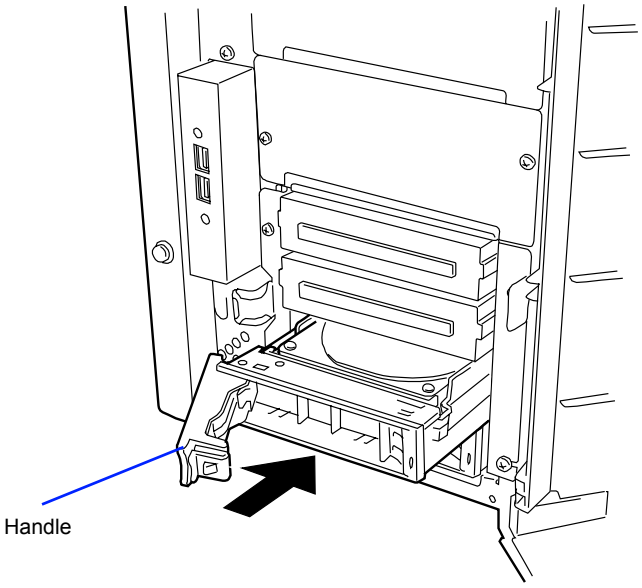
5. Unlock the lever of the hard disk drive.



6. Securely hold the hard disk drive (with tray) and handle, and insert it into the slot.

IMPORTANT:

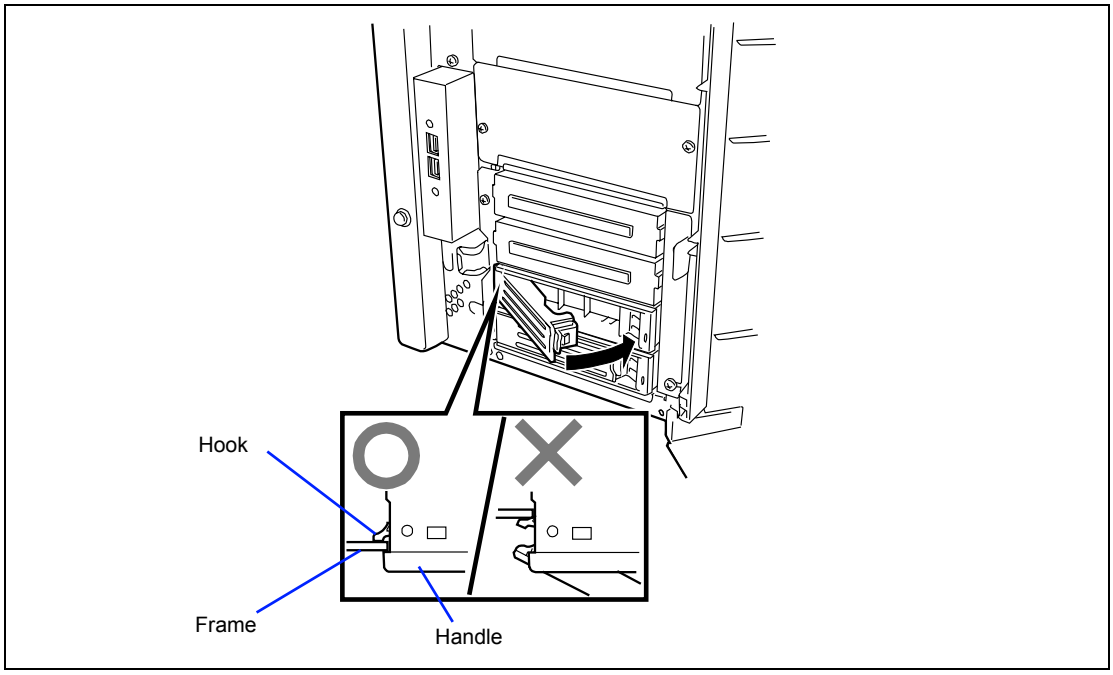
- Push the hard disk drive until the hook of the handle hits the frame.
- Hold the hard disk drive carrier with both hands securely and carefully.



7. Slowly push the handle. The handle is locked with a click.

IMPORTANT: Note that your fingers may not be caught between the handle and the tray.

NOTE: Make sure that the hook of the handle is hanged on the frame.



8. Close the door opened in step 2.

Removal

Remove the hard disk drive in the following procedure.

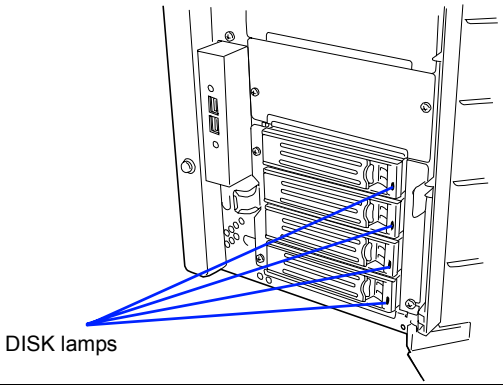
IMPORTANT: About data on the hard disk drive

Be sure to take appropriate measures not to leak important data (e.g., customers' information or companies' management information) on the removed hard disk drive to any third parties.

Data seems to be erased when you empty "Recycle Bin" of Windows or execute the "format" command of the operating system. However, the actual data remains written on the hard disk drive. Data not erased completely may be restored by special software and used for unexpected purposes.

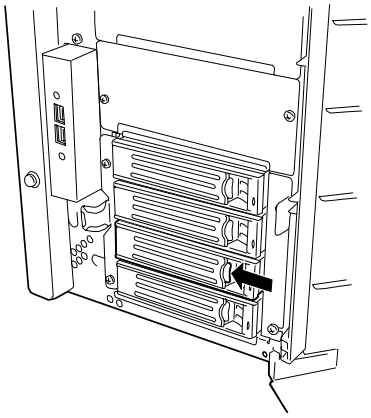
It is strongly recommended that the software or service (both available at stores) for data erasure should be used in order to avoid the trouble explained above. For details on data erasure, ask your sales representative.

NOTE: To remove a defected hard disk drive, locate the slot on which the disk lamp of the hard disk drive is lit amber.

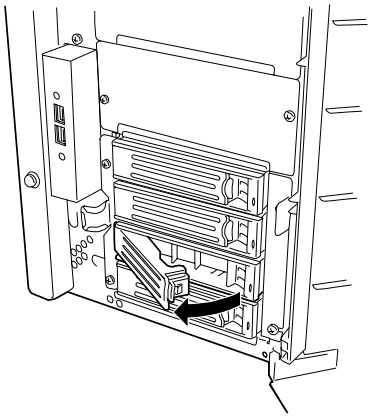


1. See the section "Preparing for Installation and Removal" described earlier to prepare (in other than the disk array configuration).
2. Release the lock of the front door by using the security key to open the front door.

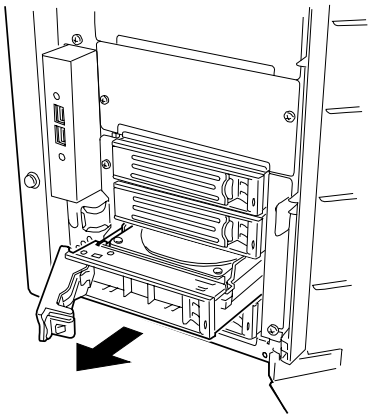
3. Push the lever to release the lock.



4. Pull the handle toward you.



5. Hold the handle and hard disk drive securely and pull it forward.



6. To use the server with the hard disk drive removed, insert a dummy tray into the empty slot.

   IMPORTANT: To maintain the cooling effect in the server, install the dummy tray in the vacant slot of the disk bay.

7. Close the door opened in step 2 securely.

In the disk array configuration, the auto rebuild function can be used. The auto rebuild function can record the information saved in a defected hard disk drive into the new replaced disk to recover the server to the state before the occurrence of the fault.

The auto rebuild function is valid for disk arrays set to RAID1 or RAID5.

The auto rebuild is automatically started only by the hot-swap of a defected hard disk drive (or disk replacement in the power-on state). During the auto rebuild, the disk lamp on the hard disk drive is lit green or amber alternatively.

IMPORTANT:

- If the auto rebuild fails, the disk lamp on the hard disk drive goes on amber. Provide the disk removal or installation again to run the auto rebuild.
- If the disk array monitoring utility is installed, the following display or operation may occur. However, the auto rebuild is conducted correctly if the disk lamp of the hard disk drive subject to the auto rebuild is not lit amber after the termination of the auto rebuild.
  - Message "Rebuild was canceled" appears on the screen during the auto rebuild.
  - It seems that the auto rebuild is terminated once and then restarted.

Obey the following cautions when the auto rebuild function is used.

- Do not turn off the power of the server in the interval from a fault of a hard disk drive to the end of the auto rebuild.
- Install a new hard disk drive after the interval of 90 seconds or longer has passed from the removal of the defected hard disk drive.
- If a hard disk drive is being rebuilt, do not replace another disk. (The disk lamp on the hard disk being rebuilt is lit green or amber alternatively.)

Power Supply Unit

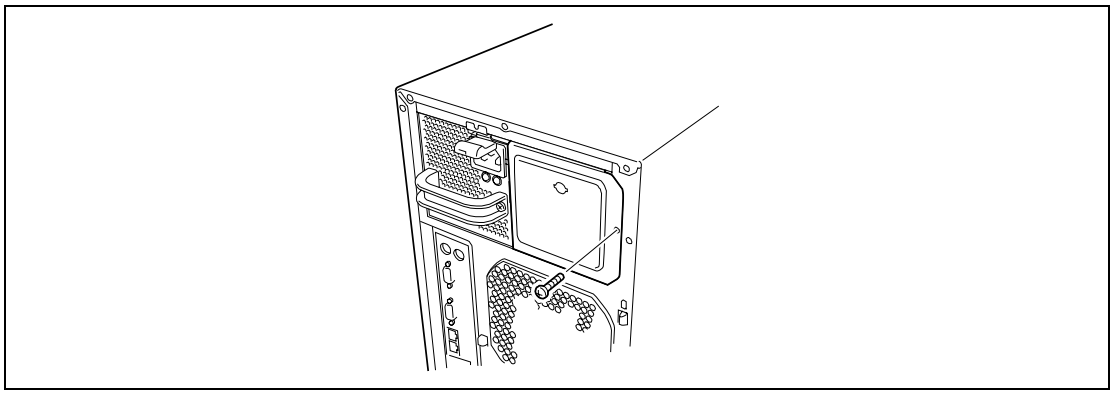
Your server can contain one or two power supply units.

The second power supply unit is optional and provides a redundant configuration that ensures continued operation of the system in the unlikely event one of the power supply units fails.

Installation

Install the power supply unit in the following procedure.

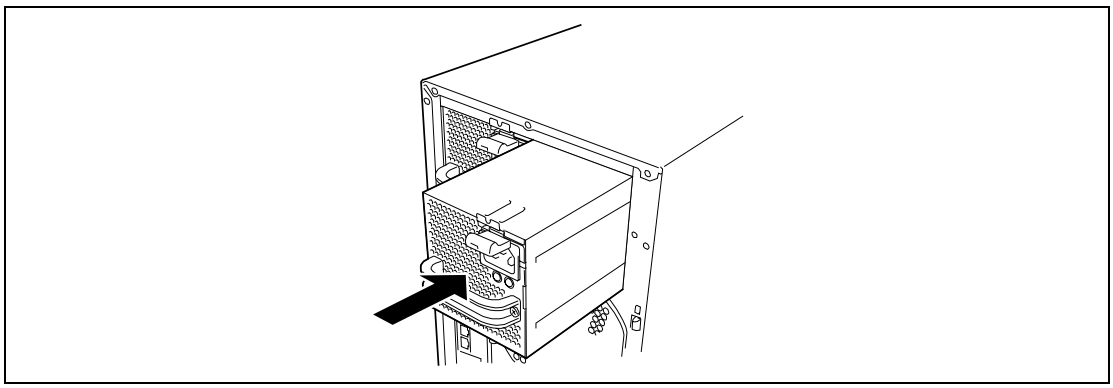
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Loosen a screw securing the blank cover to remove the cover from the chassis.



IMPORTANT: Keep the removed blank cover for future use.

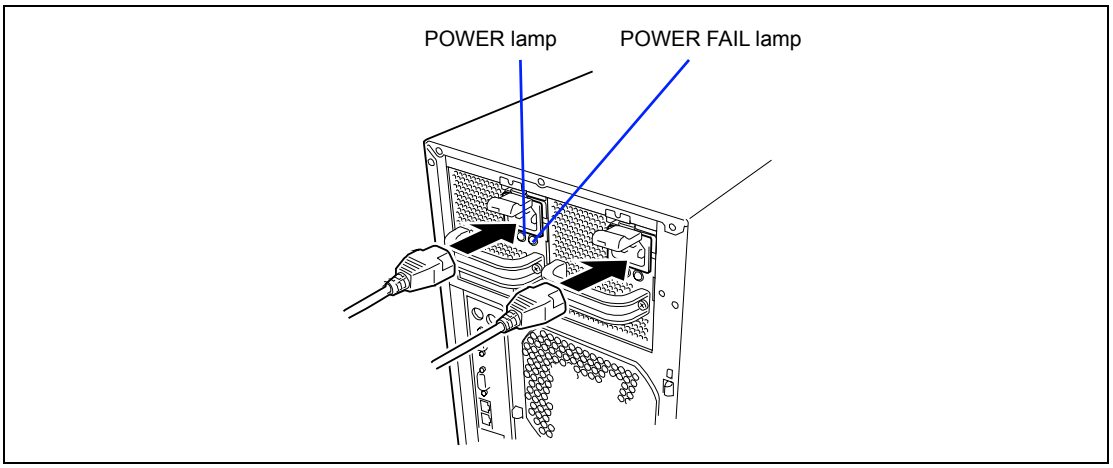
3. Insert the power supply unit into the vacant slot until it locks.

IMPORTANT: Insert the power supply unit straight into the slot. To avoid damaging the power supply unit, do not tilt or twist the unit as you push it into the connector.



4. Connect two power cords to the AC inlets.

Use the standard power cord coming with the server and the cord coming with the power supply unit. The POWER lamp (green) blinks when the power cords are connected. If the lamp does not go on, check if the power is supplied to the unit. If the lamp remains off or the POWER FAIL lamp goes on amber, the power cord or the power supply unit may be defected or the power supply bay containing the power supply unit may be failed. Contact your service representative to ask for maintenance.



5. Turn on the power of the server.

The POWER lamps on the power supply units go on.

6. Make sure that any error on the power supply unit occurs with the STATUS lamp and POST.

See Chapter 8 for details of error indications.

When the POWER lamp of the power supply unit is off, reinstall the power supply unit. If the POWER lamp is still off, contact your service representative.

NOTE: When the optional power supply unit is installed but the power cord is connected to either of the power supply unit, the POWER FAIL lamp on the other unit goes on amber.

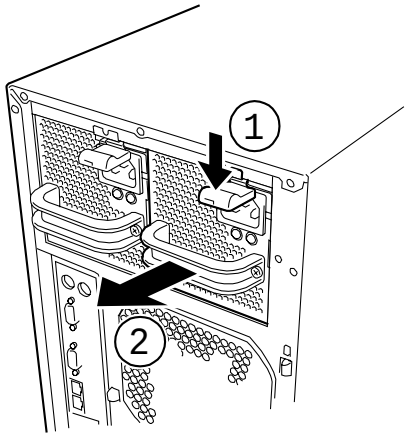
Replacement of Defected Power Supply Unit

The power supply unit should be replaced only when it is defected.

> **IMPORTANT:** Do not remove any power supply unit if it operates normally.

> **NOTE:** When the server is equipped with two power supply units and one of them operates normally, the other defected power supply unit can be replaced under the system operation (or in the power-on status). In this case, skip step 2 in the procedure below.

1. Check the POWER FAIL lamps (amber) of the power supply units on the rear face and determine which module needs to be replaced.
2. Shutdown the system and power off the server.
3. Disconnect the power cord from the failed power supply unit.
4. While pressing down on the lever, grasp the handle and carefully pull the power supply unit out of the bay.



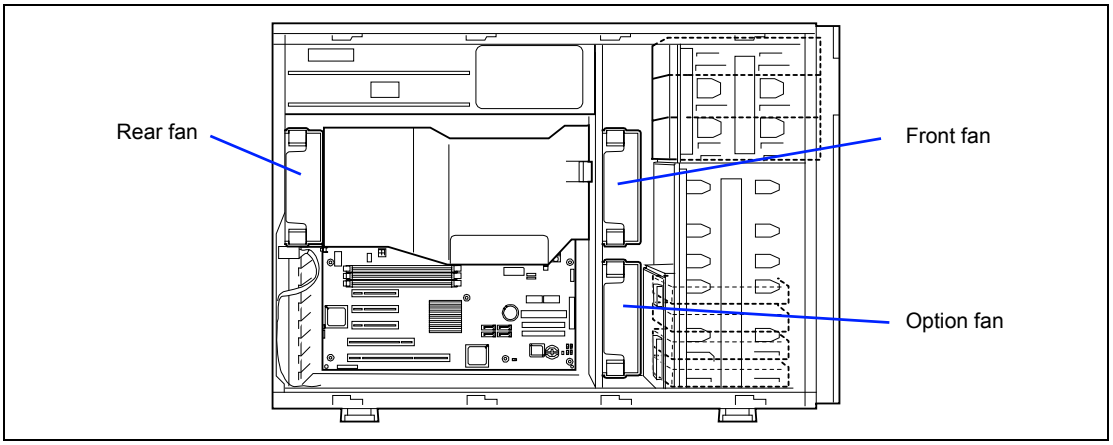
5. If you are not going to install a replacement power supply unit, you must install a blank cover you removed in step 2 of installation procedure to vacant slot.

> **IMPORTANT:** To maintain the cooling effect in the server, install the blank cover in the vacant slot of the power supply unit bay.

6. Install the power supply unit referring to steps 3 to 9 of the installation and make sure that the power supply unit is installed securely.

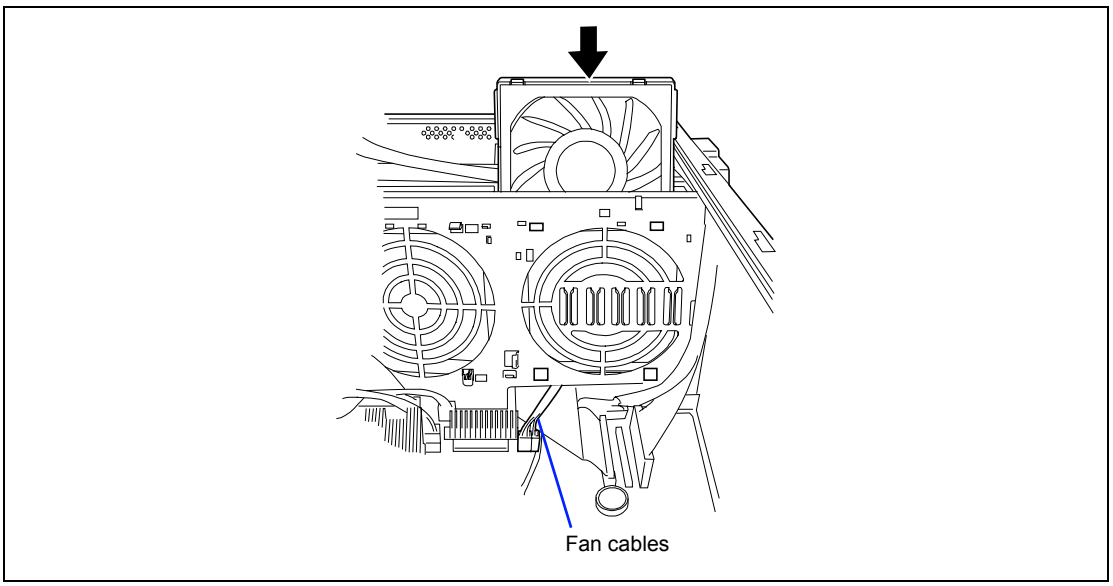
Cooling Fan Unit

Your server can contain up to three cooling fans for cooling the CPU, memory, and PCI devices (up to two cooling fans when the water cooling kit is installed).



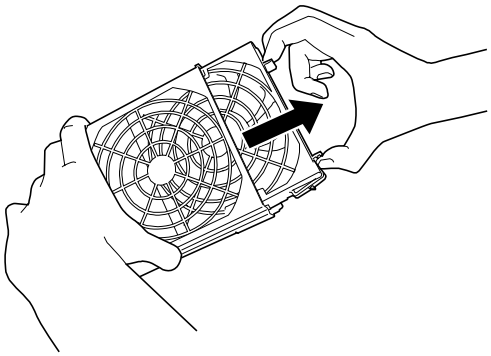
Installation

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the side cover.
3. Insert the cooling fan unit into the chassis as shown in the figure below.



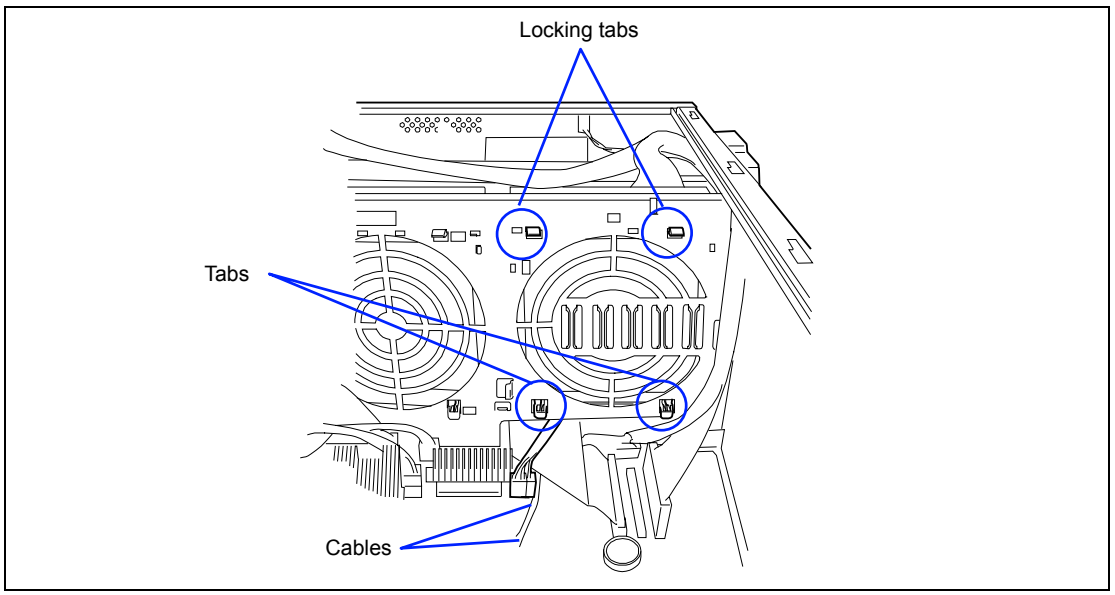
NOTES:

- Pass the cooling fan cables to the mother board connector (see the figure).
- For easy installation, remove the hot-swap fan from the cooling fan unit during installation.



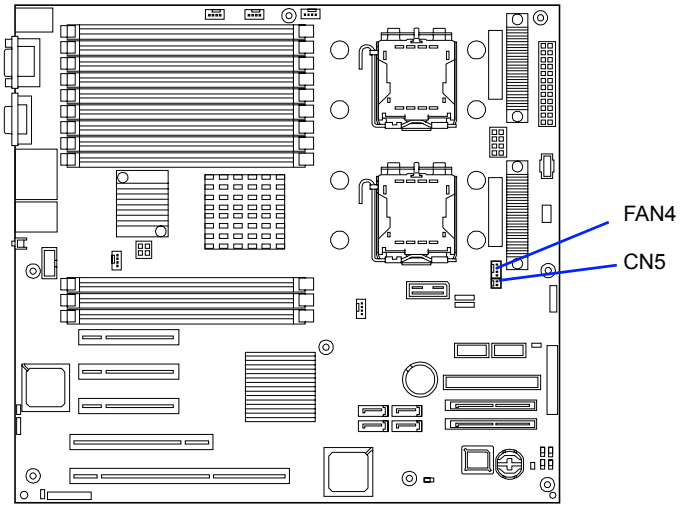
4. Insert the tabs into holes on the frame of the server, and push the cooling fan unit toward the frame.

The cooling fan unit is locked with locking tab.



5. Connect the cooling fan cables to the connectors on mother board.

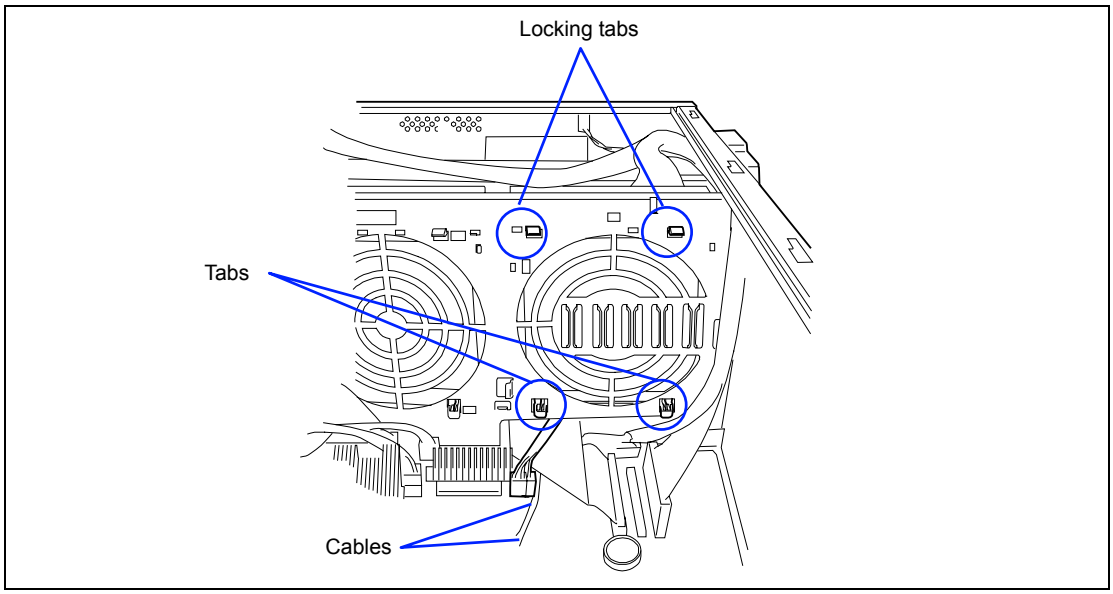
Take care to connect the cable to the proper connector. Otherwise, NEC ESMPRO will fail to monitor the server.



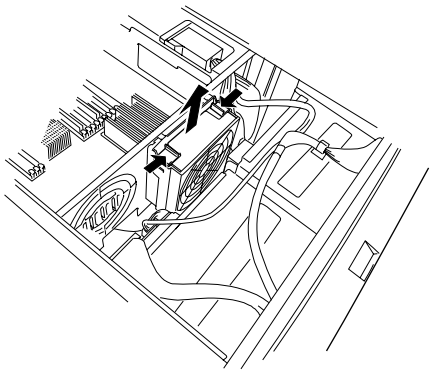
6. Reassemble the removed components.

Removal

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the side cover.
3. Remove the connectors of the fan unit from the mother board.
4. Push the locking tab to unlock the cooling fan unit, and remove the fan unit from the server.



NOTE: For easy removal, remove the hot-swap fan from the cooling fan unit during removal.



5. Reassemble the removed components.

Hot-swap Fan

⚠ WARNING

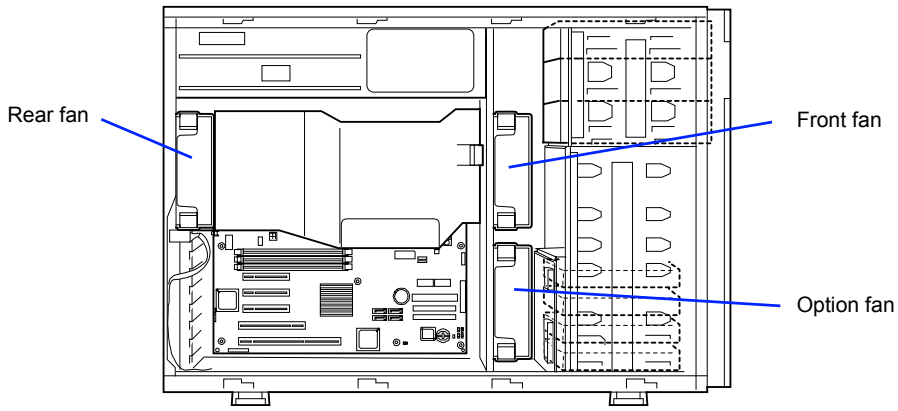
Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-8 for details.

- Stay away from fan.
- Do not touch any other component than specified.

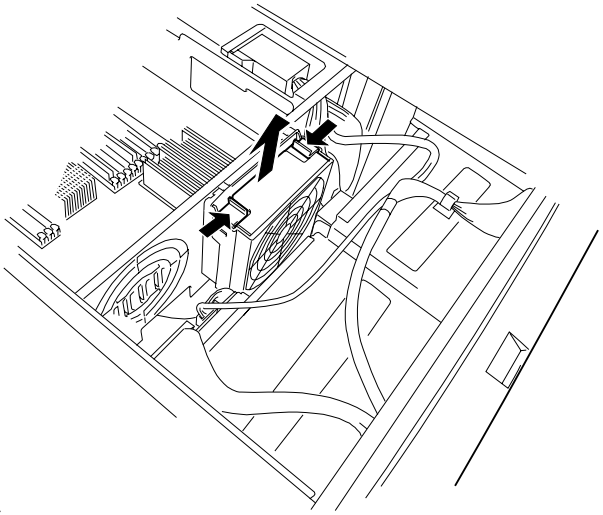
Your server accommodates two standard hot-swap fans and one optional hot-swap fan.

IMPORTANT:

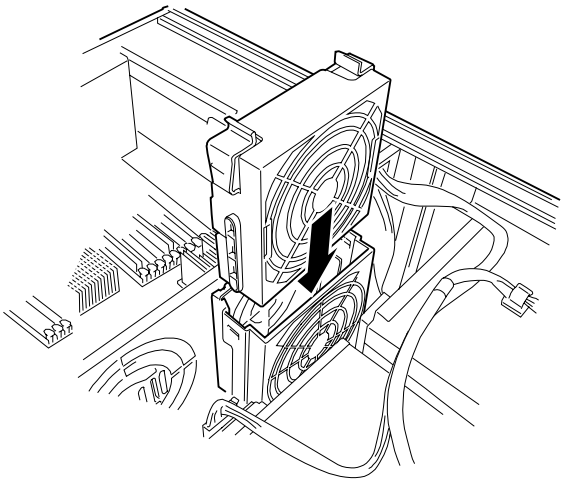
- Do not remove a fan unless it is failed.
- Once you remove a factory-installed fan from the system, replace it within five minutes.



1. Locate the failing fan by viewing alert message of NEC ESMPRO, system event log, or POST error code.
2. Remove the side cover.
3. Hold the tabs on both sides of the hot swap fan, and pull the hot swap fan out of the fan unit



4. Insert the new hot swap fan into the fan unit until it is locked with clicks.



5. Reassemble the removed components.

HDD Cage

Installing an optional HDD cage in the 3.5-inch hard disk drive bay on the front of the server allows the server to be equipped with up to four hard disk drives in addition to four drives normally installable. Hard disk drives are not installed in the HDD cage (except for BTO (built to order)). Purchase them additionally.

IMPORTANT:

Do not use any hard disks not approved by NEC. If an unapproved third party's hard disk is installed in the server, not only the hard disk drive but also the server itself may be defected. Purchase hard disk drives of the following models:

– N8150-199F (36.3GB, 15,000 rpm, SAS)

– N8150-200F (73.2GB, 15,000 rpm, SAS)

– N8150-201F (146.5GB, 15,000 rpm, SAS)

For the disk array configuration, refer to the manual that comes with the disk array controller.

A hard disk drive having thickness of about 1 inch can be inserted to each of the four slots in the HDD cage. SCSI ID4 - SCSI ID7 are assigned in the order from bottom to top.

If the optional HDD cage is installed in the 3.5-inch hard disk drive bay, the cable attached to the 3.5-inch hard disk drive cage should be connected to the SAS connector on the motherboard.

For disk array configuration, connect the cable on the 3.5-inch hard disk drive bay to the disk array controller. Additional hard disk drives to be used should have the same SCSI standard as the normal hard disk drives (or SAS).

Dummy trays (made of styrofoam) are inserted to empty slots in the 3.5-inch hard disk drive bay (except the bottom slot). This is intended to improve the cooling effect in the server. Always insert a dummy tray to any slot without a hard disk drive.

IMPORTANT: A specified dummy tray must be used.

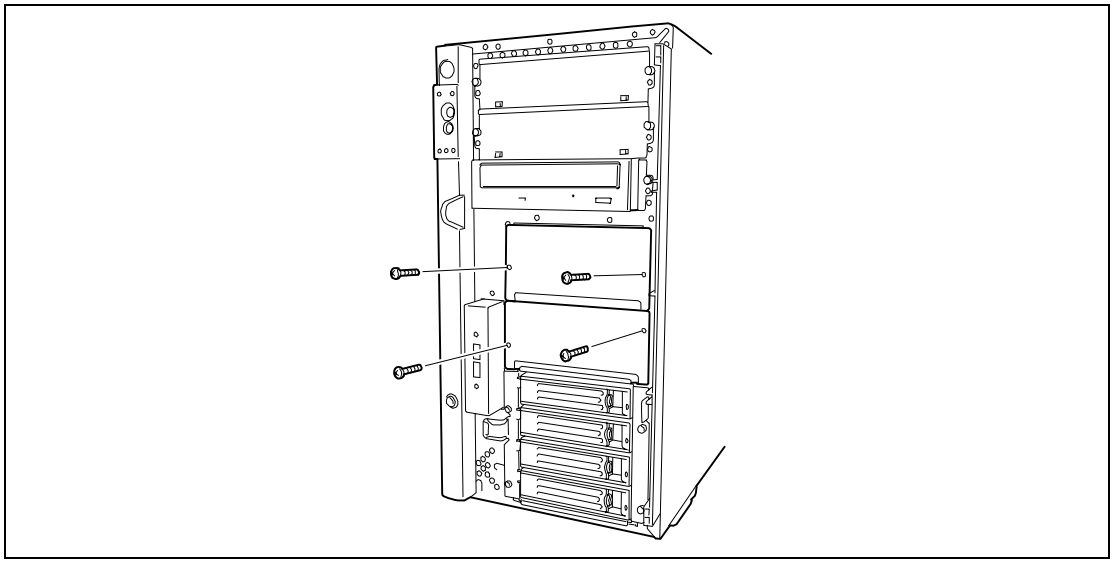
Installation

Install the HDD cage in the 3.5-inch hard disk drive bay in the following procedure.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Release the lock of the front door by using the security key and open the front door.
3. Remove the side cover.
4. Remove the fan unit.

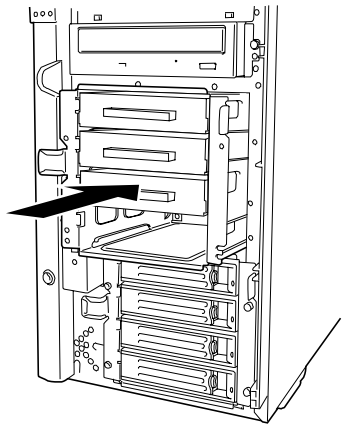
   The fan unit should be removed to facilitate connection of cables to the connectors on the HDD cage easily.
5. Remove the dummy cover from the slot to which the HDD cage is to be inserted.

   Remove the four dummy cover fixing screws to remove the dummy cover.



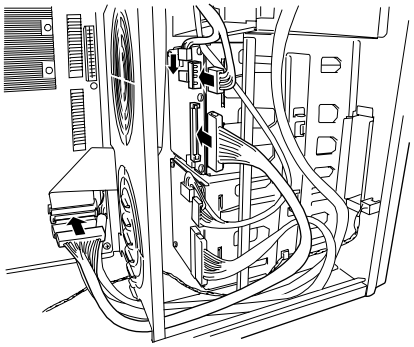
IMPORTANT: Keep the removed dummy tray for future use.

6. Insert the HDD cage to the mating slot.

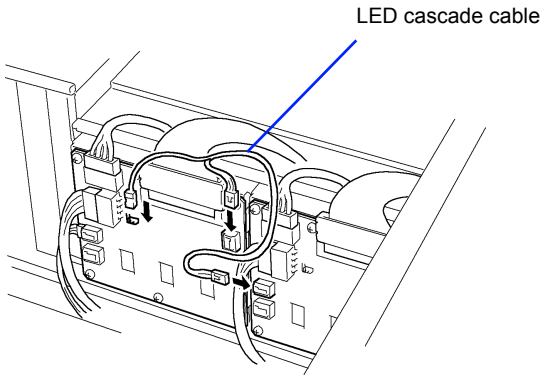


7. Connect proper cables to the connectors on the rear of the HDD cage.

Connect the power cables (P10 and P11) of the server to the mating power connectors on the rear of the HDD cage. Connect one end of the SAS cable to the SAS control connector on the rear of the HDD cage and the other end to the SAS control connector (SAS2).



Connect the LED cascade cable as shown in the figure below. Connect the LED cable that has been connected with the factory-installed HDD cage to the connector on the additional HDD cage.

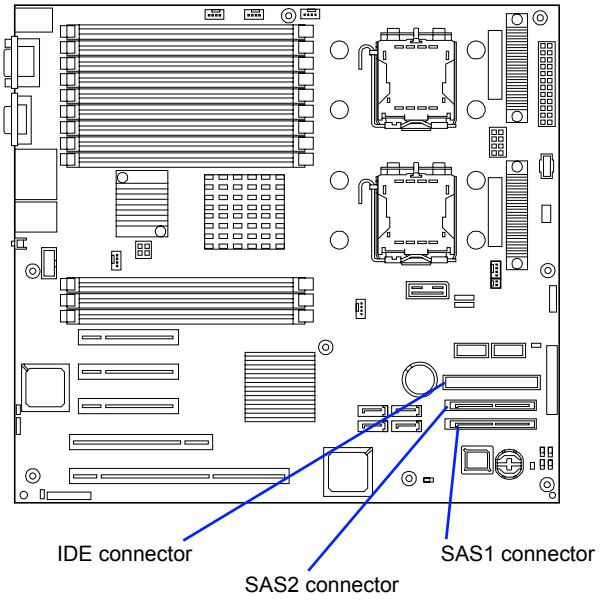


– SAS1 connector

The SAS1 connector is connected to the normally installed HDD cage (ID0 to ID3).

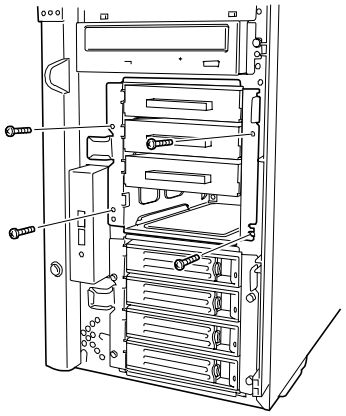
– SAS2 connector

The SAS2 connector is intended to be connected to an additional HDD cage.



8. Fix the HDD cage to the server.

Fix the HDD cage to the server with four fixing screws.



9. Install the components having been removed.

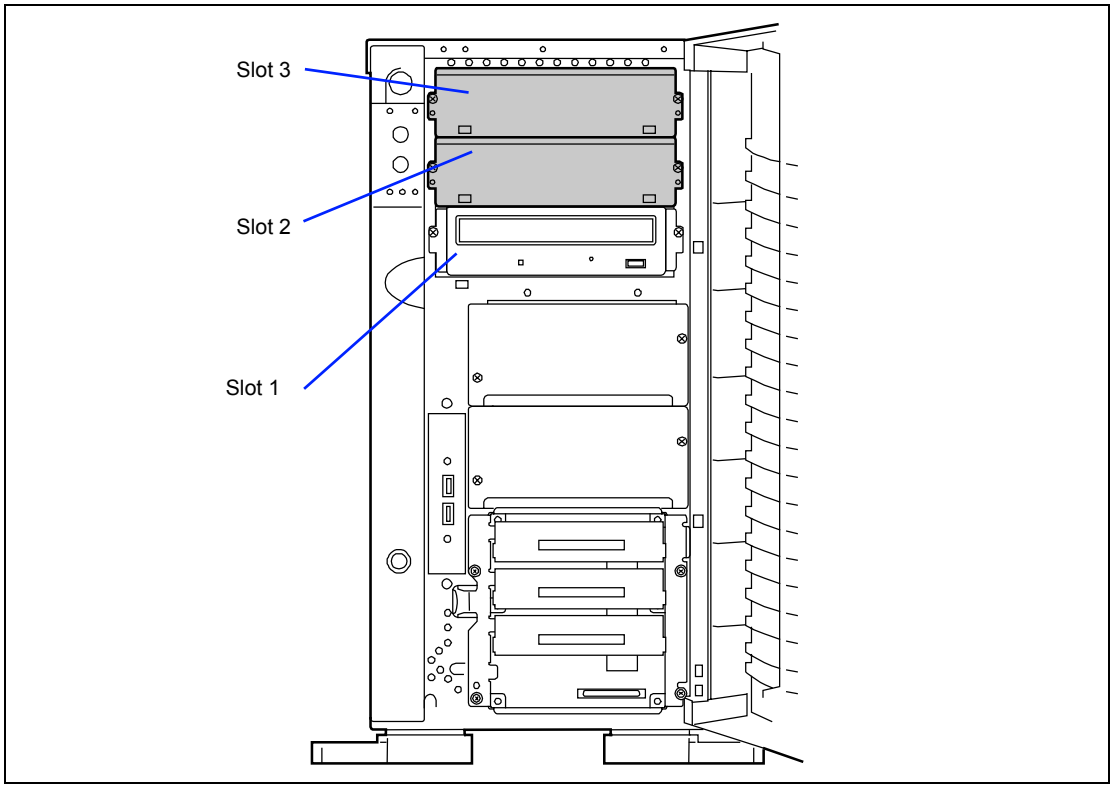
10. Install the device driver referring to the User's Guide attached to the installed HDD cage.

Removal

Remove the HDD cage in the reverse procedure of the installation.

5.25-inch Device

The server contains three slots in which backup devices including DVD-ROM and magnetic tape drives can be installed. The DVD-ROM drive is factory installed in bottom slot. To install a backup device, you must prepare a separately priced SCSI controller.

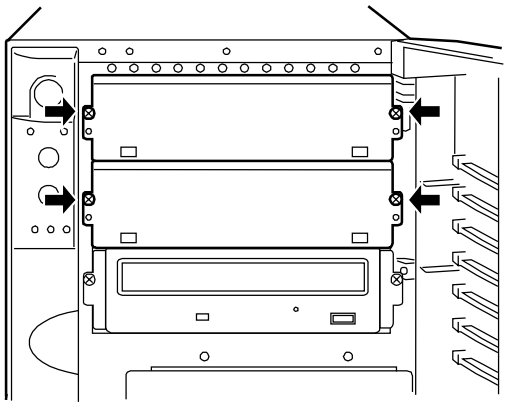


IMPORTANT:

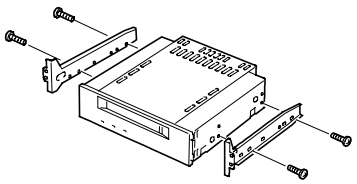
- Two single-height devices or one double-height device can be installed.
- Set the SCSI termination of the device to be installed to OFF and assign a unique SCSI ID not duplicated or corrupted with that of any other device. Refer to the documentation coming with each of the devices for how to assign an ID.
- For single-height device, first install a device in slot 1. Then install another device in slot 2.
  For double-height device, install the device to the slots 2 and 3.
- To install the N8151-32B internal DVD-RAM, set the operation mode to "SLAVE".

Installation

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the side cover.
3. Remove the two screws fixing the dummy cover.
4. Pull out the dummy cover toward you carefully.



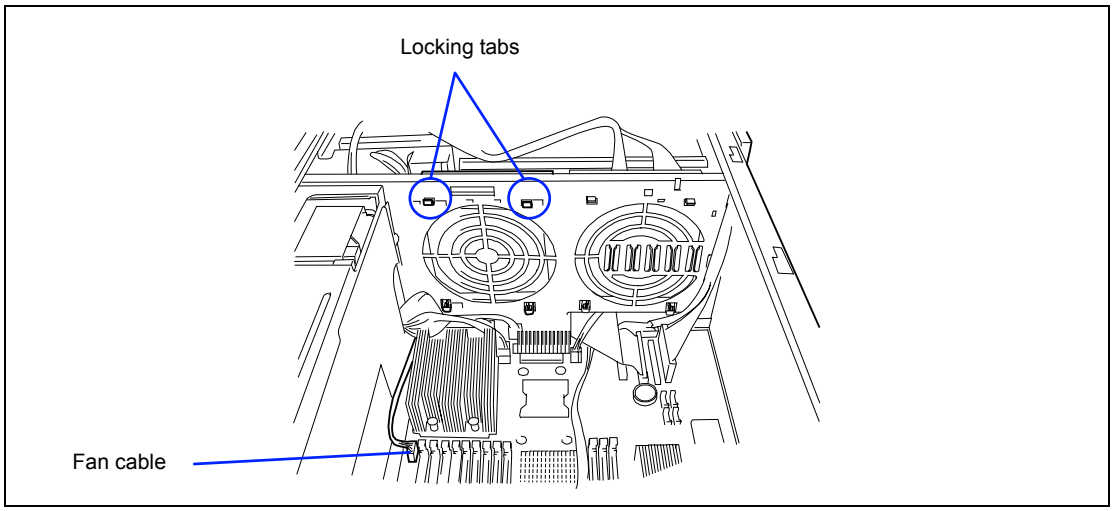
5. Fix the rails coming with the server to the 5.25-inch device by using the four screws coming with the device.



IMPORTANT:

- Always use the screws coming with the 5.25-inch device. Using longer screws or those of different diameter may cause the device to be broken.
- When installing a double-height device, use the DLT device rails (larger L-shaped rail) that come with the server.

6. Disconnect the front cooling fan cable connector from the mother board.
7. Press the locking tabs to unlock the fan unit, and remove the front cooling fan unit from the chassis (see the figure below).

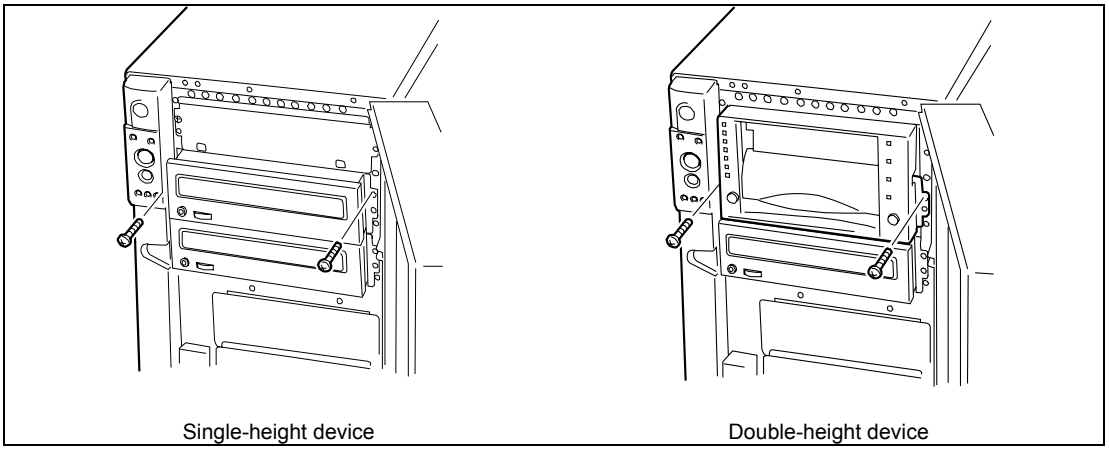


8. Push the 5.25-inch device to the device bay carefully.

NOTE: Make sure that the cables are not caught while the 5.25-inch device is pushed into the slot.

IMPORTANT: If a 5.25-inch device occupying two slots cannot be inserted easily, push the device to the slots with it lifted a little.

9. Fix the rails by using the screws removed in step 3.



10. Check whether the installed 5.25-inch device is projected too much from the front of the server.

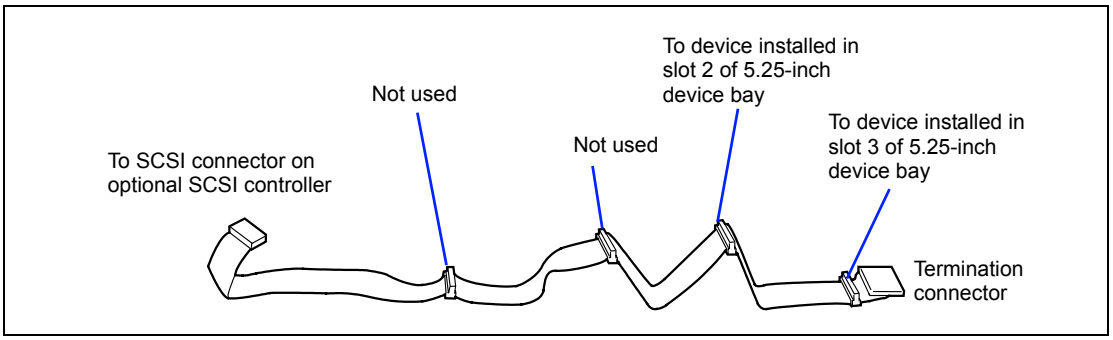
Check the device installed in a 5.25-inch device bay based on the factory-installed DVD-ROM drive.

11. Connect the interface and power cables to the 5.25-inch device installed from the left side of the server.

See Chapter 10 for cable connection.

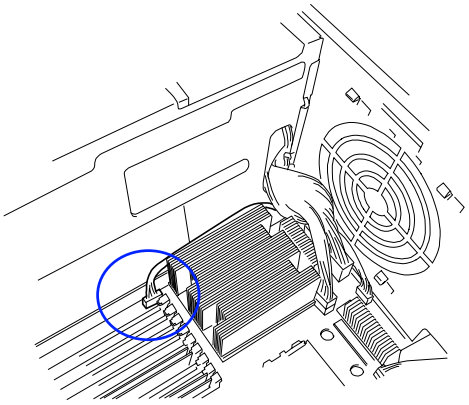
IMPORTANT: Connector pin bending or incomplete connection may cause a malfunction to occur. Provide the connection securely watching the 5.25-inch device and cable connectors.

NOTE: Make sure that the cable is not caught.


To device installed in slot 2 of 5.25-inch device bay
Not used
To device installed in slot 3 of 5.25-inch device bay
Not used
To SCSI connector on optional SCSI controller
Termination connector

12. Install the removed components.

- **IMPORTANT:** Pass the front cooling fan cables to the mother board connector (see the figure).



13. Setup the SCSI BIOS for the SCSI device according to the manual that comes with the SCSI controller.
14. Install the device driver according to the manual that comes with the device.

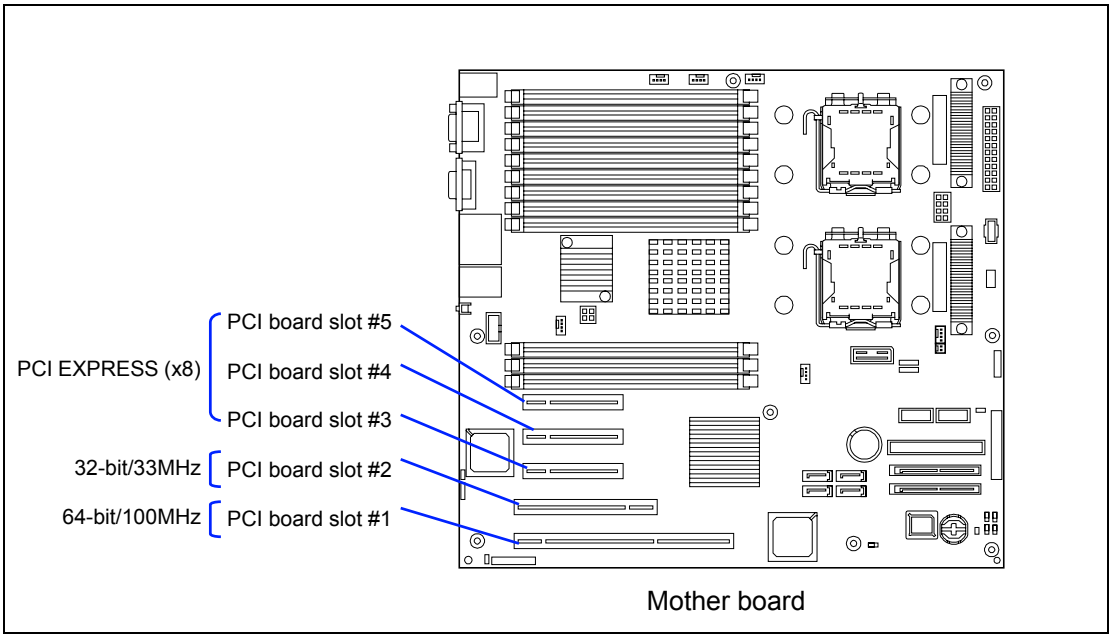
Removal

Remove the 5.25-inch device in the reverse procedure of the installation.

PCI Board

The server contains five slots into which PCI boards can be inserted.

IMPORTANT: Any PCI board is easily affected by static electricity. Handle a PCI board after making your body contact with a metallic frame section of the server to discharge the static electricity on your body. Do not make bare hands contact with terminals and components on the PCI board. In addition, do not put the PCI board on a desk directly. See "Static Precautions" in this chapter for details of the static electricity.



Installation

Install a board connected to a PCI board slot in the following procedure.

IMPORTANT:

- When installing several PCI boards in PCI slots, do not route the SCSI cable between PCI boards. If the cable contacts with the IC and elements on PCI board, the PCI board or cable may be damaged.
- Due to some board type, you may remove the connector cap from an adjacent slot or SCSI connector for external devices before installing the board.
- 3.3V or universal PCI board can be installed in PCI board slots #1.
- 5V or universal PCI board can be installed in PCI board slot #2.

NOTE: When installing a PCI board, make sure that the board connector matches the connector of the PCI board slot.

List of optional devices and their available slots

N code	Product name	PCI-X #1	PCI #2	PCIe #3	PCIe #4	PCIe #5	Note
	PCI slot capability*1	64 bit/ 100MHz	32 bit/ 32MHz	x8 lane			
	Slot size	Full-height					
	PCI board type*1	3.3V	5V	x8 socket			
	Available board size	Long/short					
N8103-95	SCSI controller (64-bit/66MHz PCI)	√	√	–	–	–	Cannot connect with internal hard disk drive.
N8103-75	SCSI controller (64-bit/133MHz PCI-X)	√	√	–	–	–	Cannot connect with internal hard disk drive.
N8103-126	SCSI controller (64-bit/133MHz PCI-X)	√	√	–	–	–	2 max. Cannot connect with internal hard disk drive. For connection with SATA disk array
N8103-91	Disk array controller for onboard SAS (PCI EXPRESS (x4))	–	–	√	√	√	1 max. 3 max. with N8103-90/80/81
N8103-90	Disk array controller for external SAS (PCI EXPRESS (x4))	–	–	√	√	√	3 max. Cannot connect with internal hard disk drive. 3 max. with N8103-80/81/91
N8103-80	Disk array controller (1 ch) (64-bit/66MHz PCI)	√	√	–	–	–	Cannot connect with internal hard disk drive. 3 max. with N8103-91/90/81
N8103-99	Disk array controller (0 ch) (64-bit/133MHz PCI-X)	√	–	–	–	–	1 max.
N8103-81	Disk array controller (2 ch) (64-bit/66MHz PCI)	√	√	–	–	–	Cannot connect with internal hard disk drive. 3 max. with N8103-91/90/80
N8104-111	100BASE-TX adapter (32-bit/33MHz PCI)	√	√	–	–	–	2 max.
N8104-86	100BASE-TX adapter (32-bit/33MHz PCI)	√	√	–	–	–	2 max.
N8104-119	1000BASE-T adapter (64-bit/133MHz PCI-X)	√	√	–	–	–	Cannot co-exist with N8104-112.
N8104-120	1000BASE-T adapter (2 ch) (64-bit/133MHz PCI-X)	√	√	–	–	–	
N8104-114	1000BASE-T adapter (PCI EXPRESS (x1))	–	–	√	√	√	Teaming with another N8104-114 is allowed.
N8104-121	1000BASE-T adapter (2ch) (PCI EXPRESS (x4))	–	–	√	√	√	2 max.
N8104-112	1000BASE-SX adapter (2ch) (64-bit/133MHz PCI-X)	√	√	–	–	–	1 max. per PCI bus (2 max. per PCI bus with AFT) Cannot co-exist with N8104-103/113.

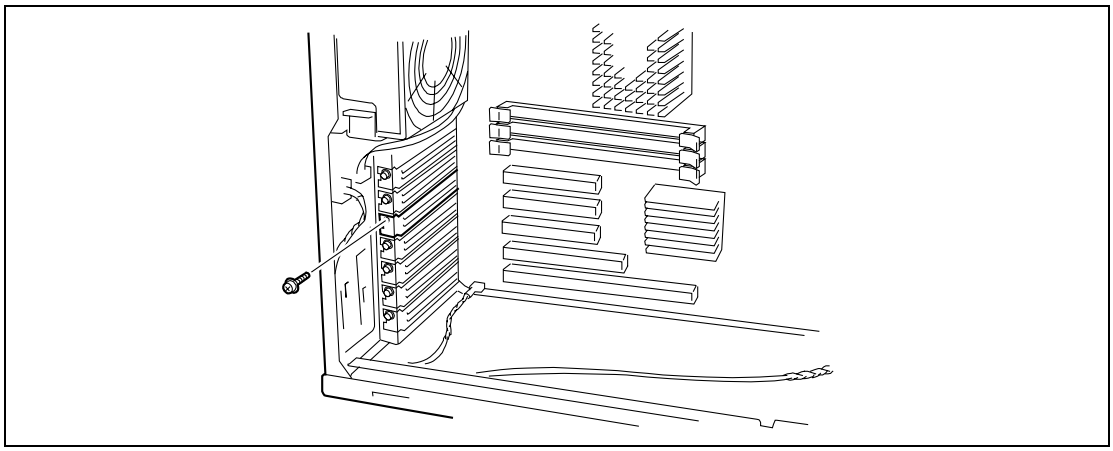
√: Available, –: Unavailable

Onboard LAN Controller Considerations

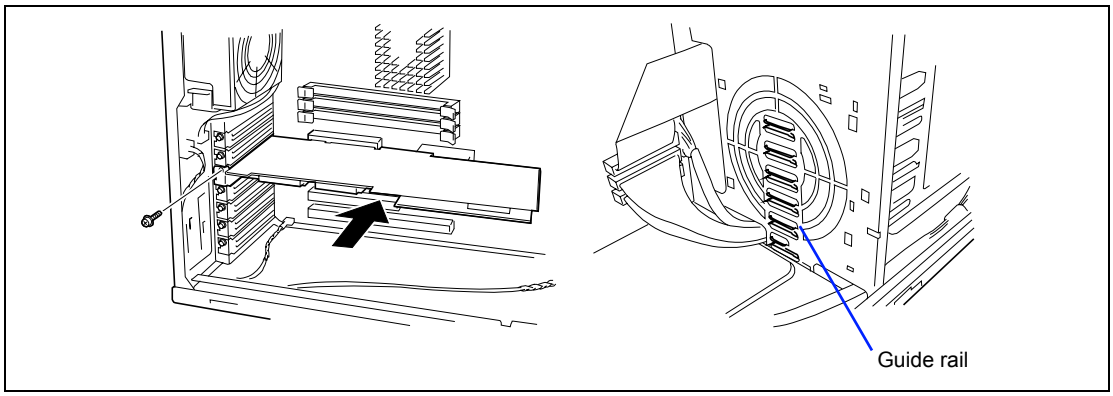
It is possible to configure the Teaming function of AFT (Adapter Fault Tolerance)/ALB (Adaptive Load Balancing) in a standard network controllers (on board LAN controllers). But it is impossible to configure the Teaming function of the same AFT/ALB on a standard network controller and an optional LAN board.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the side cover.
3. Remove the additional slot cover and a screw at the same location (height) as the installation slot.

IMPORTANT: Keep the additional slot cover being removed for future use.



4. Make the component side of the board face the bottom of the server, slowly insert the board aligning the board connector with the slot on mother board.



NOTE: For a long-sized board, align the right end of the board with the groove of the guide rail on the server and then connect the board to the slot.

5. Push the board fully so that the board connector is certainly connected to the slot.

   IMPORTANT: If the board cannot be installed easily, remove the board once and then reinstall it. Excess force added to the board may cause the board to be broken.

6. Fix the board with a screw removed in Step 3.
7. Reinstall the removed components.
8. Turn on the power of the server. Then make sure that any error message does not appear in POST.

   If an error message appears, write down the message and review the error message list in Chapter 8.

9. Run the BIOS SETUP Utility to set the "Reset Configuration Data" in the "Advanced" menu to "Yes".

   This is required to update the hardware configuration information. See Chapter 4 for details.

Removal

Remove the board in the reverse procedure of the installation. Then install the additional slot cover.

Disk Array Controller Board

The disk array controller board (N8103-80/81/90/91) is an optional PCI board developed to improve data reliability.

> **NOTE:** The server contains onboard RAID controller. See the online document in NEC EXPRESSBUILDER CD-ROM for configuring RAID using the onboard RAID controller.

Installing the disk array controller board allows you to use hard disk drives in the device bays of the server and those in the optional additional disk unit in the disk array configuration.

Function of disk array controller	Description
Level	Supports RAID0, 1, 5, 10, or 50.
Hot plug	Allows a device such as a hard disk drive to be replaced under the system operation status.
Auto rebuild	After the defected hard disk drive is replaced with a new one, the data saved in the defected hard disk drive is automatically recovered from the data saved in the remaining hard disk drives.
Expand capacity	The addition of a hard disk drive without system interruption can automatically expand the area in which disk arrays are available and logical drive capacity.

Cautions

Note the following on the configuration of a disk array.

- The disk array controller board is easily affected by static electricity. Handle the disk array controller board after making your body contact with a metallic frame section of the server to discharge the static electricity on your body. Do not make bare hands contact with terminals and components on the disk array controller board. In addition, do not put the disk array controller board on a desk directly. See "Static Precautions" for details of the static electricity.
- To change the disk array configuration or the RAID, the hard disk drives must be initialized. If important data is saved in the hard disk drives used to constitute a disk array, first back up the data in other hard disk drives before installing boards and configuring the disk array.
- At least two hard disk drives are required to configure a disk array.
- Hard disk drives used in the disk array configuration should have the same disk revolution rate and capacity in packs.
- See "PCI Board" in this Chapter for the slot in which a board can be installed.
- Up to four disk array controller boards can be installed in the server.

- Several RAID (Redundant Arrays of Inexpensive [Independent] Disks) levels can be set for the disk array configuration in the server in which disk array controller board is installed. Refer to the online document stored in "NEC EXPRESSBUILDER" CD-ROM coming with the server or the documentation coming with the disk array controller for details of the available RAIDs, data transfer rate, and array configuration.
- The available capacity of the hard disk drives in the disk array configuration is lower than the total capacity of the hard disk drives configuring the disk array while the disk reliability is improved.
- Set "PCI Slot n Option ROM (n: slot number)," a parameter of the slot in which a hard disk drive is installed, to "Enable" in "PCI Configuration" on the Advanced menu of the BIOS SETUP utility.
- Replacement of disk array controller board

  Restore the disk array configuration information in the disk array controller boards. Use the configuration utility for the restoration. Refer to the online document stored in "NEC EXPRESSBUILDER" CD-ROM coming with the server or the documentation coming with the disk array controller for details. If a disk array controller is replaced, create the configuration information by using the proper utility.
- When two or more disk array controller boards are installed in the server, install the disk array controller board to which the system disk to be booted is connected in the PCI slot having the highest priority. For example, if two disk array controller boards are installed in PCI slots #3 and #4, the system disk should be connected to the board installed in PCI slot #3.

Slot No.	Boot priority
#5	3
#4	4
#3	1
#2	5
#1	2

Using Internal Disks in Disk Array Configuration

For the installation of the RAID controller board, see "PCI Board" and the manual that comes with the RAID controller board.

Use the interface cable coming with the RAID controller board. Disconnect the cable from the server and keep it for future use. After the installation, provide the setting such as RAID level for the RAID controller board by using the disk array BIOS utility of the board.

Refer to the manual that comes with the RAID controller board for details.

Disk Array Configuration of Additional Disk Unit

The N8141-36F additional disk unit is exclusively used for installation of hard disk drives. The cabinet can contain up to 14 hard disk drives. The server equipped with disk array controller boards (N8103-80/81) can be connected with up to four additional disk units. (See Chapter 10 or the documentation coming with the additional disk unit for details of the additional disk units.)

IMPORTANT:

- The additional disk unit does not contain hard disk drives. Purchase the drives additionally.
- To connect with additional disk unit, use the server of rack-mount type, or use the additional disk unit of tower type (pedestal type). In both cases, you need an optional conversion kit.

To connect the server with the N8141-36F additional disk unit, any of the following optional cables are required:

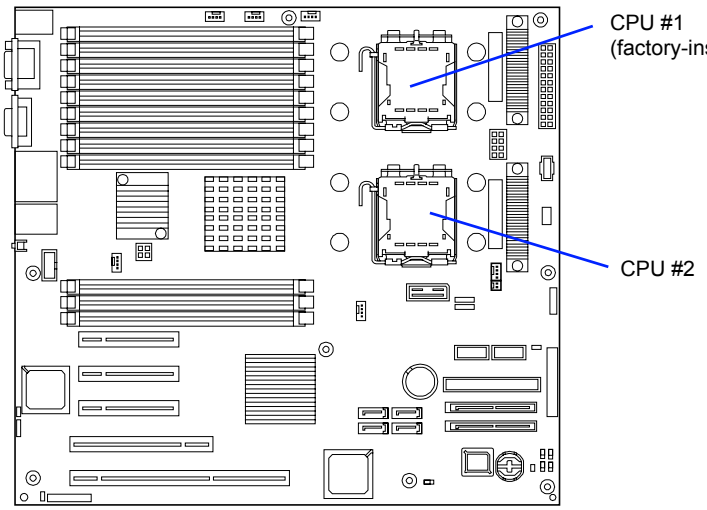
- K410-93(01) additional disk unit connecting SCSI cable
- K410-93(03) additional disk unit connecting SCSI cable
- K410-93(06) additional disk unit connecting SCSI cable

After the connection of the additional disk unit to the server, provide the disk array configuration for the additional disk unit by using the Disk Array Configuration Utility. See the manual that comes with the disk array controller for details of the procedure.

In the disk array configuration of the additional disk unit, the auto rebuild function which the disk array controller board has can recover the data if any one of hard disk drives installed in the additional disk unit is defected to destroy data. (Replace the defected hard disk drive with a new one with the power being on (hot-swap)).

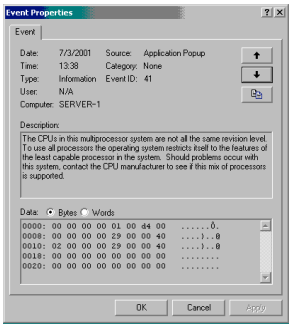
Processor (CPU)

The server may have another CPU installed in addition to the standard CPU (Intel Xeon Processor).



Mother board

NOTE: If the different revision of the processor is installed in the multiprocessor system, Windows logs the following information every startup. If this message is logged, it is no problem for operation.

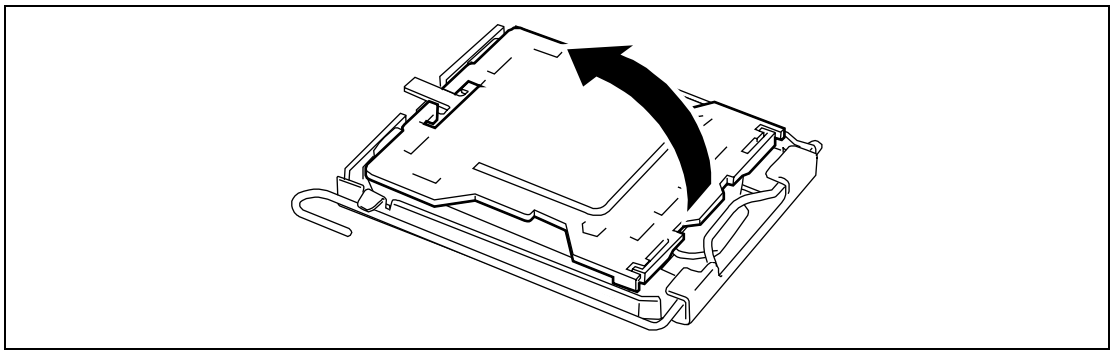

Event Properties
Event
Date: 7/3/2001 Source: Application Popup
Time: 13:38 Category: None
Type: Information Event ID: 41
User: N/A
Computer: SERVER-1
Description:
The CPUs in this multiprocessor system are not all the same revision level. To use all processors the operating system restricts itself to the features of the least capable processor in the system. Should problems occur with this system, contact the CPU manufacturer to see if this mix of processors is supported.
Data: Bytes Words
0000: 00 00 00 00 01 00 04 00 .....Ô.
0008: 00 00 00 00 29 00 00 40 ....)..@
0010: 02 00 00 00 29 00 00 40 ....)..@
0018: 00 00 00 00 00 00 00 00 ....
0020: 00 00 00 00 00 00 00 00 ....
OK
Cancel
Apply

Installation

Install a CPU in the following procedure.

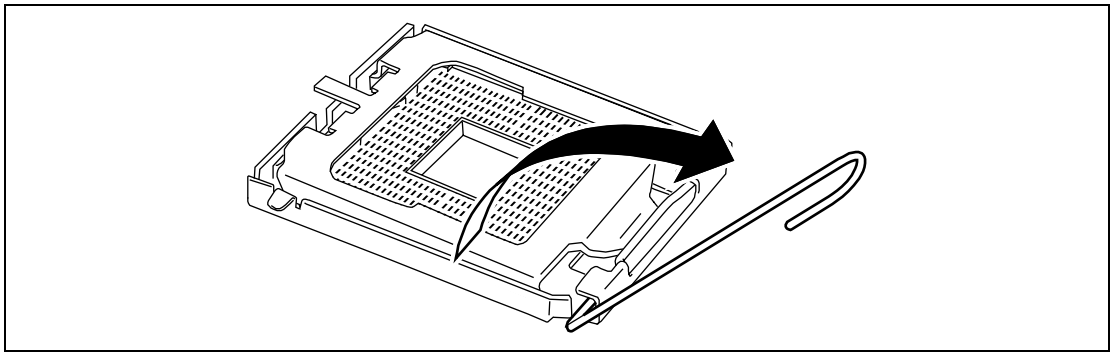
> **IMPORTANT:** Any CPU is easily affected by static electricity. Handle a CPU after making your body contact with a metallic frame section of the server to discharge the static electricity on your body. Do not make bare hands contact with the CPU pins. In addition, do not put any CPU on a desk directly. See "Static Precautions" for details of the static electricity.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the components as follows:
   - Side cover
   - CPU duct cover
3. Locate the CPU socket which you are going to install CPU.
4. Remove the CPU cover.

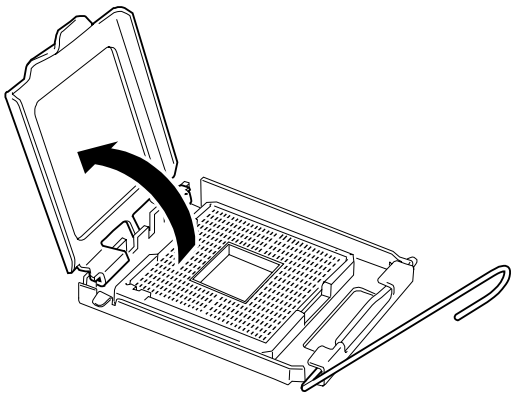


5. Raise the locking lever on the socket.

> **IMPORTANT:** Open the lever until it stops. The bar can be opened to 120 degrees or more.

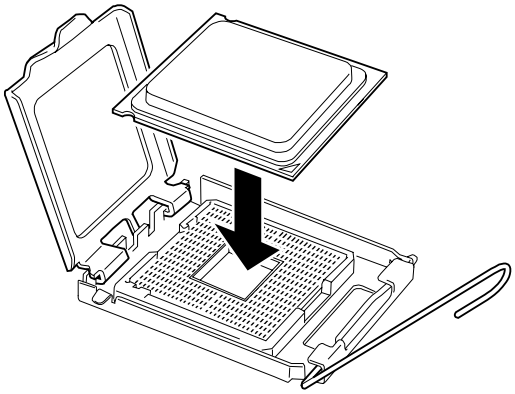


6. Raise the CPU socket holder.

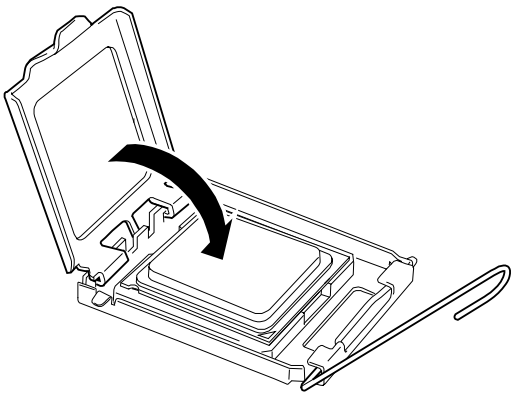


7. Put the CPU on the socket slowly and carefully.

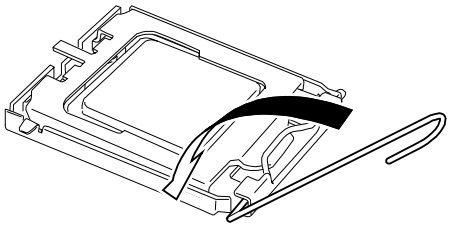
IMPORTANT: Make sure of the orientation of CPU. A pin mark is placed on CPU and CPU socket to prevent an incorrect insertion. Check the pin marks on CPU and socket before inserting CPU into socket.



8. Push the CPU lightly to the socket, and push down the CPU socket holder.

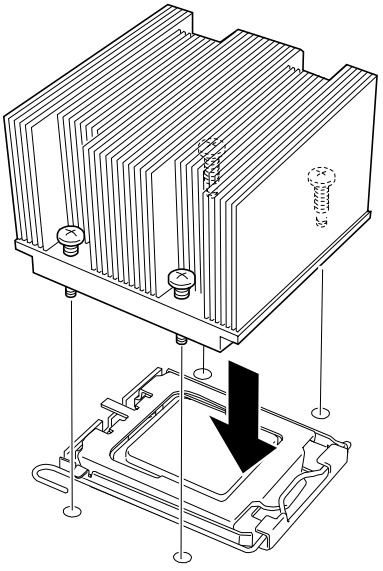


9. Push down the lever to secure the CPU.



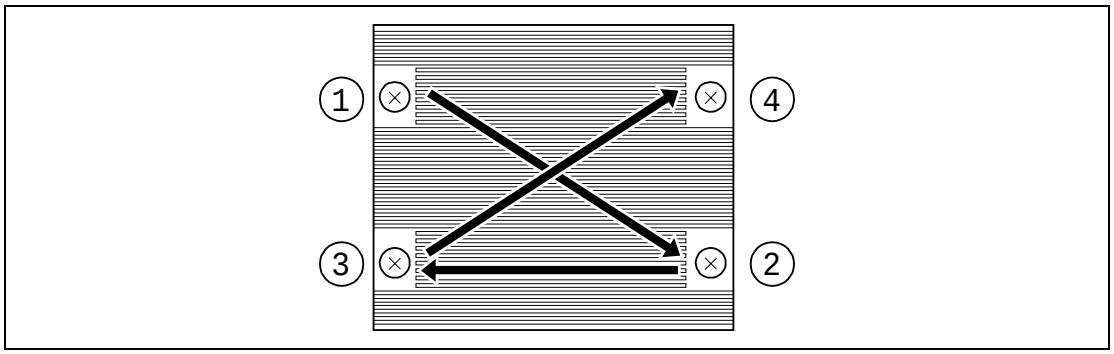
10. Put the heat sink on CPU.

If you are going to use the water cooling kit instead of heat sink, see "Water Cooling Kit" described later.



11. Fix the heat sink with four screws.

NOTE: Temporarily secure the four screws in the order as shown in the figure below. Then, secure them tightly.



12. Make sure that the heat sink is level with the mother board.

NOTES:

- If the heat sink is not level, remove it, and then install it again. The following probably causes the heat sink not to be level:
  - The CPU is not positioned correctly.
  - The heat sink is not completely secured with screws.
- Do not move the secured heat sink.

13. Install the components you removed previously.

14. Set [Reset Configuration Data] on the Advanced menu to "Yes".

This setting is required to change the hardware configuration data. See Chapter 4 for details.

15. If the CPUs are additionally installed to configure a multi-processor system, provide the following settings on Windows.

Select [Device Manager] - [Computer] and check the driver. If the driver is "ACPI single processor PC", change it to "ACPI multi-processor PC". Restart the server according to the on-screen message, and update the system. See Chapter 5 for details.

Removal

To remove the CPU, prepare for removal referring to steps 1 and 3 in the installation procedure and do the reverse procedure of steps 10 to 4. To remove the heat sink, first slightly move the heat sink at a level, then remove the heat sink.

IMPORTANT:

- Do not remove any CPU unless it is failed.
- After the operation, heat may make the cool seat at the bottom of the heat sink adhere to the CPU. To remove the heat sink from the CPU, first turn the heat sink to the left and right lightly to make sure that the heat sink can be apart from the CPU. Removing the heat sink with it adhering to the CPU may cause the CPU and/or socket to be defected.

Do the following procedure if a CPU is removed (or replaced).

1. Start SETUP to select menus [Main] – [Processor Settings] – [Processor Retest] in the order to clear the error information on the removed CPU (see Chapter 4).

   When a CPU is replaced, select menus [Main] – [Processor Settings] to confirm that the ID and L2 Cache Size of the additional CPU are defined normally (see Chapter 4).

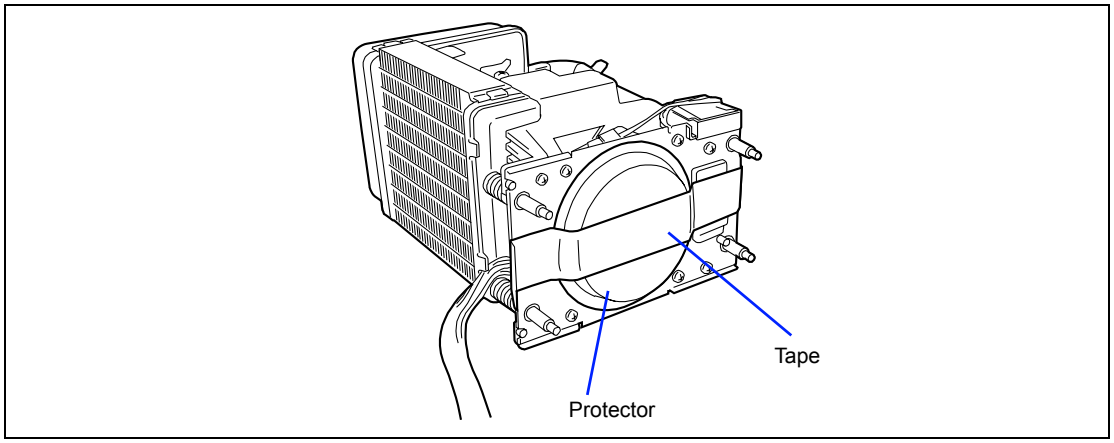
2. Set [Reset Configuration Data] on the Advanced menu to [Yes].

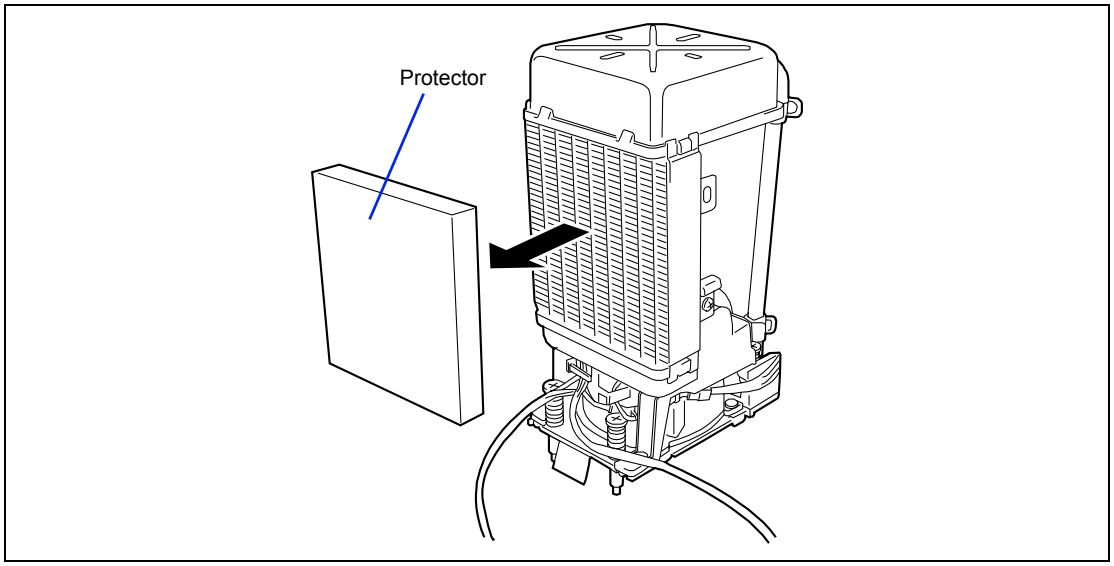
   This is required to update the hardware configuration information. See Chapter 4 for details.

Installation (Water Cooling Kit)

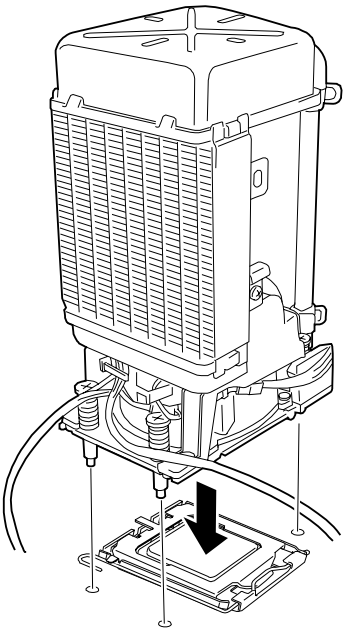
Install the water cooling kit on the CPU in the following procedure.

1. Peel off the tape and remove the protector on the bottom. Also remove the protector on the side.



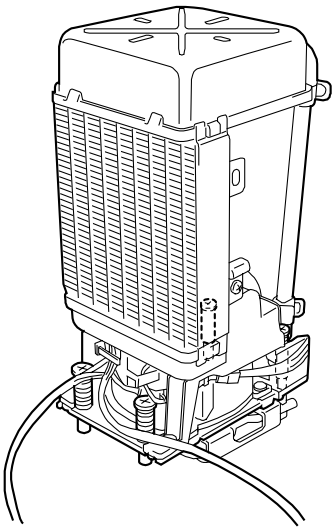


2. Put the water cooling kit on the CPU.



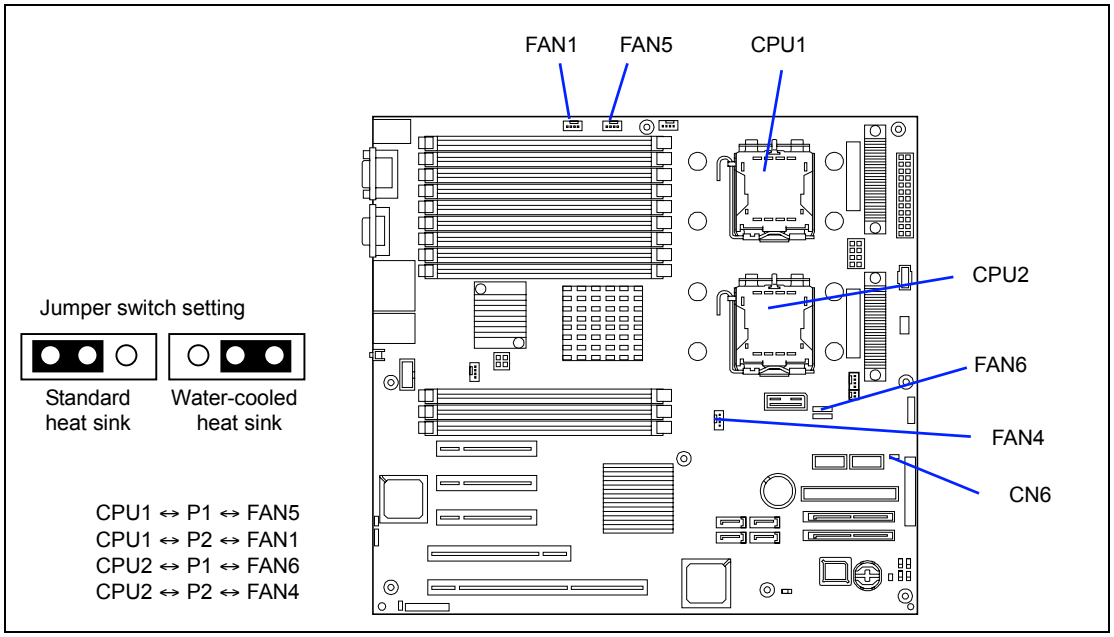
3. Fix the water cooling kit with screws.

For how to fix the water cooling kit, see step 11 of the CPU installation procedure.



4. Connect cables.

Check the connectors to which cables are to be connected for proper connections. Set the water-cooled heat sink exchange jumper switch (CN6) as shown in the figure below.



Failure to connect the cables properly or set the jumper switch correctly may cause the liquid leak and pump rotation of the water-cooled heat sink to be monitored incorrectly.

Removal (Water Cooling Kit)

Remove the water cooling kit from the CPU in the reverse procedure of the installation.

IMPORTANT: If you have installed or removed the water-cooling heat sink kit, you must update the system.

Use the "Update CD-ROM" provided with N8101-339 water-cooling heat sink to update the system.

Updating system is required in the following cases:

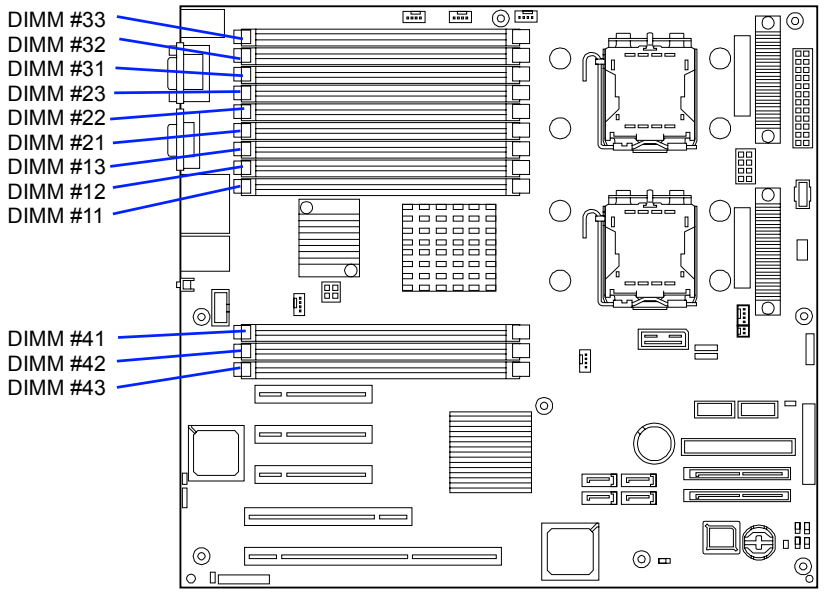
- When the standard heat sink is replaced with water-cooling heat sink
- When the water-cooling heat sink is replaced with standard heat sink
- When 1-CPU configuration with water-cooling heat sink is changed to 2-CPU configuration with water-cooling heat sink
- When 2-CPU configuration with water-cooling heat sink is changed to 1-CPU configuration with water-cooling heat sink

DIMM

The DIMM (Dual Inline Memory Module) is installed in a DIMM socket on the mother board installed in the server.

The mother board contains 12 sockets in which DIMMs are installed. Two 1-GB DIMMs are factory installed in DIMMs #11 and #21. (The factory-installed DIMMs may be replaced.)

DIMMs are installed on the sockets in the ascending order of DIMM group numbers in the unit of two modules.



Mother board

IMPORTANT: Due to an interleave device, add two DIMMs in group. The server does not operate if DIMMs of different specifications are installed in a single group.

NOTE: To use the memory mirroring and online spare memory feature, see "Using the Memory RAS Feature" described later.

Group number	Socket number in group
Group #1	DIMM #11 and DIMM #21
Group #2	DIMM #31 and DIMM #41
Group #3	DIMM #12 and DIMM #22
Group #4	DIMM #32 and DIMM #42
Group #5	DIMM #13 and DIMM #23
Group #6	DIMM #33 and DIMM #43

IMPORTANT:

- The DIMM is easily affected by static electricity. Handle the DIMM after making your body contact with a metallic frame section of the server to discharge the static electricity on your body. Do not make bare hands contact with terminals and components on the DIMM. In addition, do not put the DIMM on a desk directly. See "Static Precautions" for details of the static electricity.
- Do not use any DIMM not approved by NEC. If an unapproved third party's DIMM is installed in the server, not only the DIMM but also the server itself may be defected. You will be charged by any repair of a malfunction or defect caused by such a device within the warranty period.

NOTES:

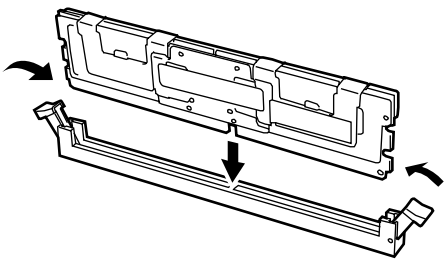
- Up to 48GB (4GB × 12) of memory can be added.
- In the error messages and logs in POST, NEC ESMPRO Manager, or Off-line Maintenance Utility, the DIMM connector may be called group. The number next to a group meets the connector number in the figure shown above.

Installation

Install a DIMM in the following procedure.

IMPORTANT: Due to an interleave device, add two DIMMs in group. The server does not operate if DIMMs of different specifications are installed in a single group.
DIMM specification is shown on the label attached to the DIMM.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the side cover.
3. Remove the CPU duct cover.
4. Locate the socket you are going to install DIMM.
5. Push the DIMM straight into the socket.



NOTE: Make sure of the orientation of the DIMM. The terminal side of the DIMM has key and key slot to prevent incorrect insertion.

If the DIMM is inserted into the DIMM socket, the lever is automatically closed.

IMPORTANT: Install a pair of DIMMs at a time. In addition, use a set of memory devices with the same specification. The specification of a memory device is described on the label put on the DIMM.

6. Install the remove components.
7. Turn on the power of the server. Then make sure that any error message does not appear in POST.

   If an error message appears, write down the message and review the error message list in Chapter 8.
8. Start SETUP to select [Advanced] → [Memory Configuration] on menus. Then make sure that the status of the additional DIMM is set to "Normal" (see Chapter 4).
9. Set [Reset Configuration Data] on the [Advanced] menu to "Yes".

   This is required to update the hardware configuration. See Chapter 4 for details.
10. When the Windows operating system is used, set the paging file size to the recommended value or larger.

    Installed memory capacity × 1.5 (See Chapter 5.)

Removal

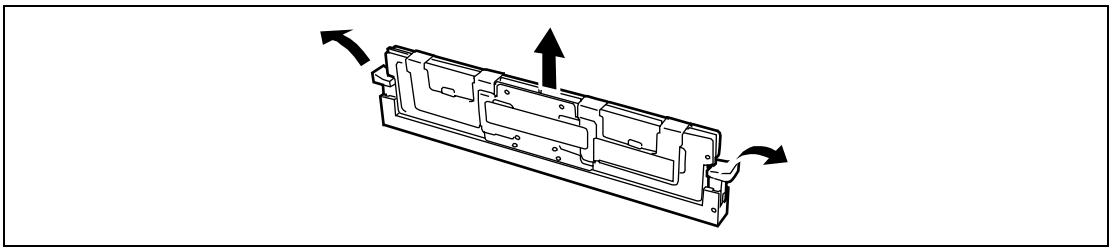
Remove the DIMM depending on the following procedure.

NOTES:

- To remove the defected DIMM, check the error message appearing in POST or NEC ESMPRO to identify the DIMM socket (group) in which the defected DIMM is installed.
- The server operates only when at least two DIMMs are installed.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Remove the side cover.
3. Remove the CPU duct cover.
4. Open the levers at the both ends of the socket for the DIMM to be removed.

   The lock is released to allow the DIMM to be removed.



5. Install the component removed in Step 2.
6. Turn on the power of the server. Then make sure that any error message does not appear in POST.

   If an error message appears, write down the message and review the error message list in Chapter 8.
7. Start the SETUP to select [Advanced] → [Memory Configuration] → [Memory Retest] on the menus to clear the error information on the removed DIMM (see Chapter 4).
8. Set [Reset Configuration Data] on the [Advanced] menu to "Yes."

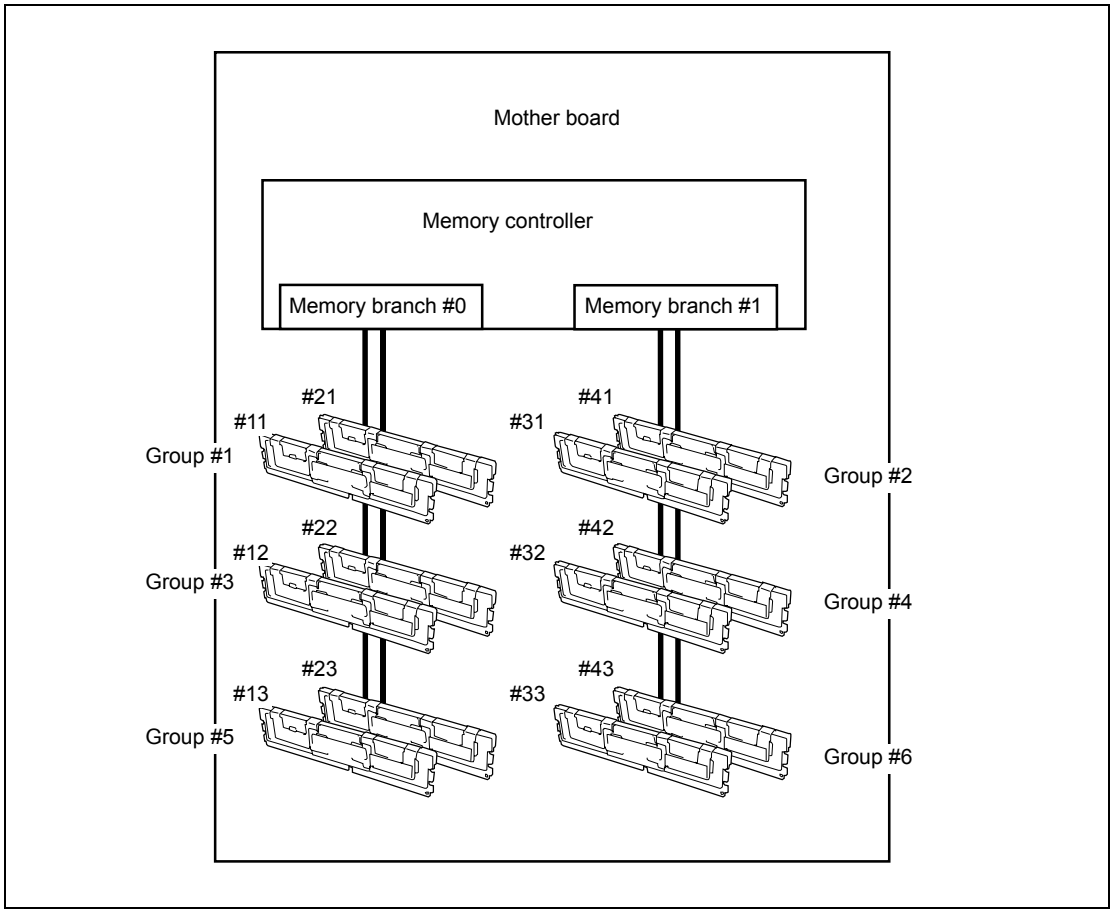
   This is required to update the hardware configuration information. See Chapter 4 for details.

Using the Memory RAS Features

The server has the memory mirroring and online spare memory features as well as the chipkill ECC memory feature, which can automatically correct a memory error (multi-bit error) causing system shutdown.

> **IMPORTANT:** The memory mirroring and online spare memory features are not available in the normal memory configuration. (The chipkill ECC memory feature can operate in any configuration.)

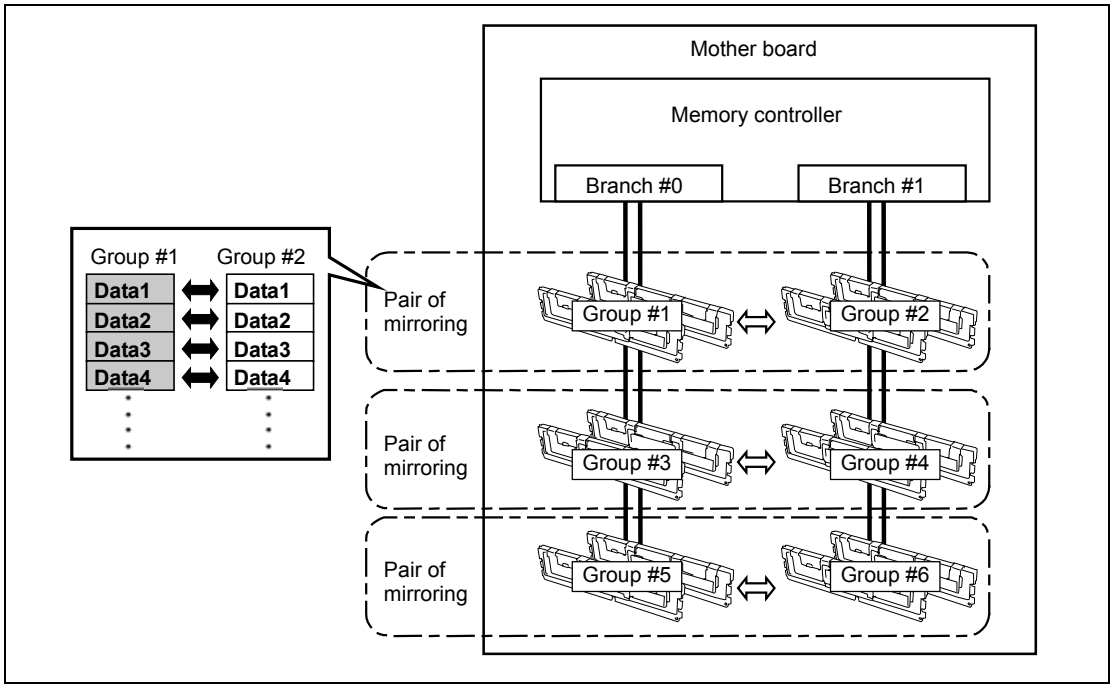
The memory area on the motherboard of the server is divided into two memory branches as shown in the figure below.



The memory mirroring and online spare memory features keep memory redundancy between memory branches and within a memory branch by monitoring or altering memory active/inactive status, respectively.

Memory Mirroring

The memory mirroring feature writes the same data into two groups of DIMMs corresponding with each other between memory branches (mirror set) to provide data redundancy.



NOTE: The operating system only recognizes a half of the total physical capacity.

The memory mirroring feature can be used under the following conditions:

- Install memory devices on four memory sockets configuring a mirror set.
- All the installed memory devices should have the same capacity.
- Run SETUP (see Chapter 4), change parameters appropriately in the [Mirror] menu selected as shown below, save the settings and exit from SETUP.

  [Advanced] → [Memory Configuration] → [Memory RAS Feature] → [Mirror]
- Install memory devices in the following order:

  Groups 1 and 2 → Groups 3 and 4 → Groups 5 and 6

The following mirroring cannot be configured:

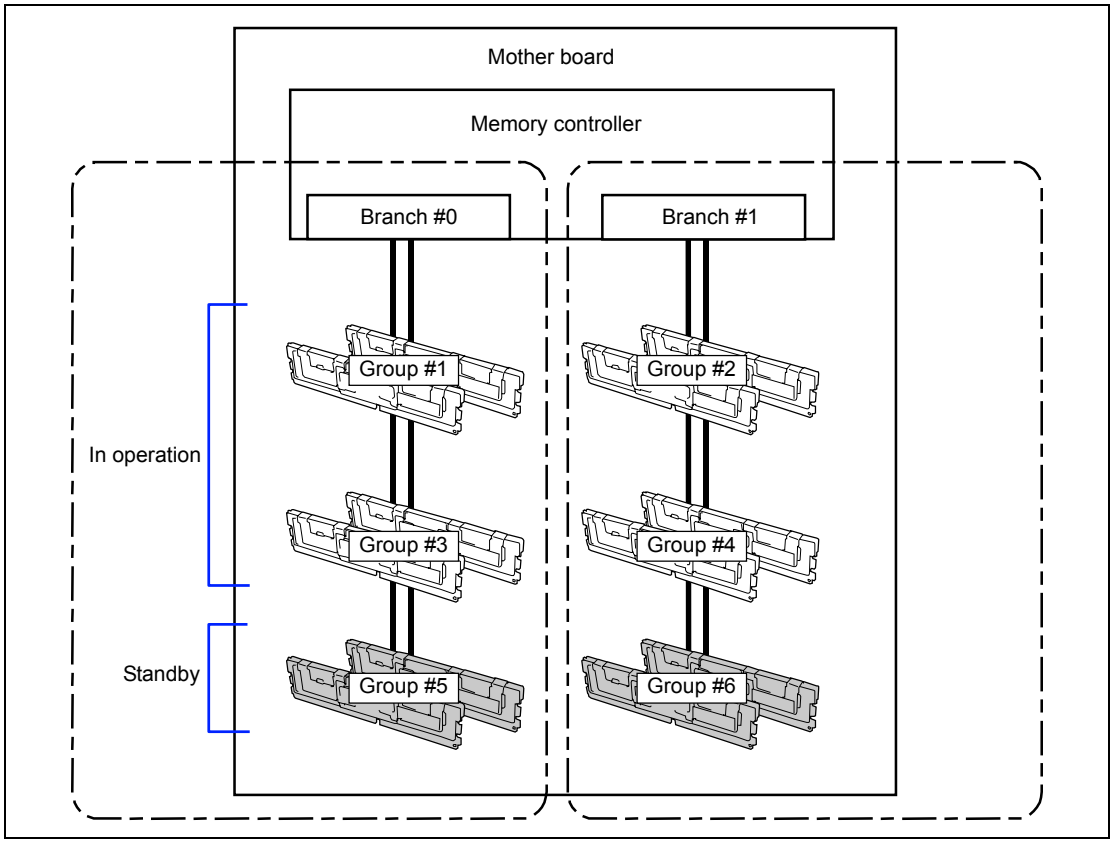
- Memory mirroring between different mirror sets
- Memory mirroring within a specific memory branch

The table below lists examples of DIMM installation patterns enabling the memory mirroring feature to be used.

Example	Memory Set (Group #)		Memory Set (Group #)		Memory Set (Group #)		Capacity	
	#1	#2	#3	#4	#5	#6	Physical	Logical
1	2GB	2GB	-	-	-	-	4GB	2GB
2	2GB	2GB	1GB	1GB	-	-	6GB	3GB
3	2GB	2GB	2GB	2GB	-	-	8GB	4GB
4	2GB	2GB	1GB	1GB	1GB	1GB	8GB	4GB
5	2GB	2GB	1GB	1GB	2GB	2GB	10GB	5GB
6	2GB	2GB	2GB	2GB	1GB	1GB	10GB	5GB
7	2GB	2GB	4GB	4GB	4GB	4GB	12GB	6GB
8	2GB	2GB	2GB	2GB	2GB	2GB	12GB	6GB
9	2GB	2GB	1GB	1GB	4GB	4GB	14GB	7GB
10	2GB	2GB	4GB	4GB	1GB	1GB	14GB	7GB
11	2GB	2GB	2GB	2GB	4GB	4GB	16GB	8GB
12	2GB	2GB	4GB	4GB	2GB	2GB	16GB	8GB
13	2GB	2GB	4GB	4GB	4GB	4GB	20GB	10GB
14	4GB	4GB	4GB	4GB	4GB	4GB	24GB	12GB
15	8GB	8GB	8GB	8GB	8GB	8GB	48GB	24GB

Online Spare Memory

The online memory spare feature puts a group of memory devices within a memory branch into standby status as spare devices. If an unrecoverable error occurs in a DIMM of the running group, the feature automatically changes the running DIMM from the failed one to a DIMM in the standby group to continue the processing.



NOTE: The operating system recognizes the memory devices as those with capacities less than the actual physical capacities. (The recognized capacities vary depending on the number of DIMMs and the physical capacity per DIMM.)

The online spare memory feature can be used under the following conditions:

- Install memory devices to more than one group in each memory branch. The server can operate if the memory branches may be different in the number of DIMMs. For example, no error occurs if memory branches 0 and 1 include four DIMMs (or two groups) and six DIMMs (or three groups), respectively.
- DIMMs installed in a specific memory branch should have the same capacity. The server can operate as long as DIMMs of the same capacity are installed in each memory branch. (For example, the server can operate if the total capacity of memory branch 0 is different from that of memory branch 1.)
- Run SETUP (see Chapter 4), change parameters appropriately in the [Sparing] menu selected as shown below, save the settings and exit from SETUP.

  [Advanced] → [Memory Configuration] → [Sparing]
- Install memory devices in the following order:

  Group 1 → Group 3 → Group 5 for memory branch 0

  Group 2 → Group 4 → Group 6 for memory branch 1

The following sparing can be neither configured nor set.

- Sparing to anther memory branch
- Specification of arbitrary memory devices as spare. The group of the largest number within a specific memory branch can be specified as spare.

The table below lists examples of DIMM installation patterns enabling the online spare memory feature to be used. While the following patterns are provided for memory branch 0, the same patterns can also be adapted to memory branch 1.

Example	Memory Blanch #0 (Group #)			Capacity	
	#1	#3	#5	Physical	Logical
1	1GB	1GB	-	4GB	1GB
2	1GB	1GB	1GB	3GB	2GB
3	2GB	2GB	-	4GB	3GB
4	2GB	2GB	2GB	6GB	5GB
5	4GB	4GB	-	8GB	6GB
6	4GB	4GB	4GB	12GB	10GB
7	8GB	8GB	-	16GB	12GB
8	8GB	8GB	8GB	24GB	20GB

Depending on specification of memory controller, the spare memory is set in unit of rank memory.

The logical memory capacity of single rank memory differs from that of dual rank memory when online spare memory is specified.

- Single rank memory configuration

  Logical memory capacity = (Physical memory capacity * Number of DIMMs) – (Physical memory capacity)

- Dual rank memory configuration

  Logical memory capacity = (Physical memory capacity * Number of DIMMs) – (Physical memory capacity / 2)

The server supports the following product number.

- N8102-246 (1GB memory): Single rank
- N8102-247/248/249 (2GB/4GB/8GB memory): Dual rank

Chapter 10

Internal Cabling Diagrams

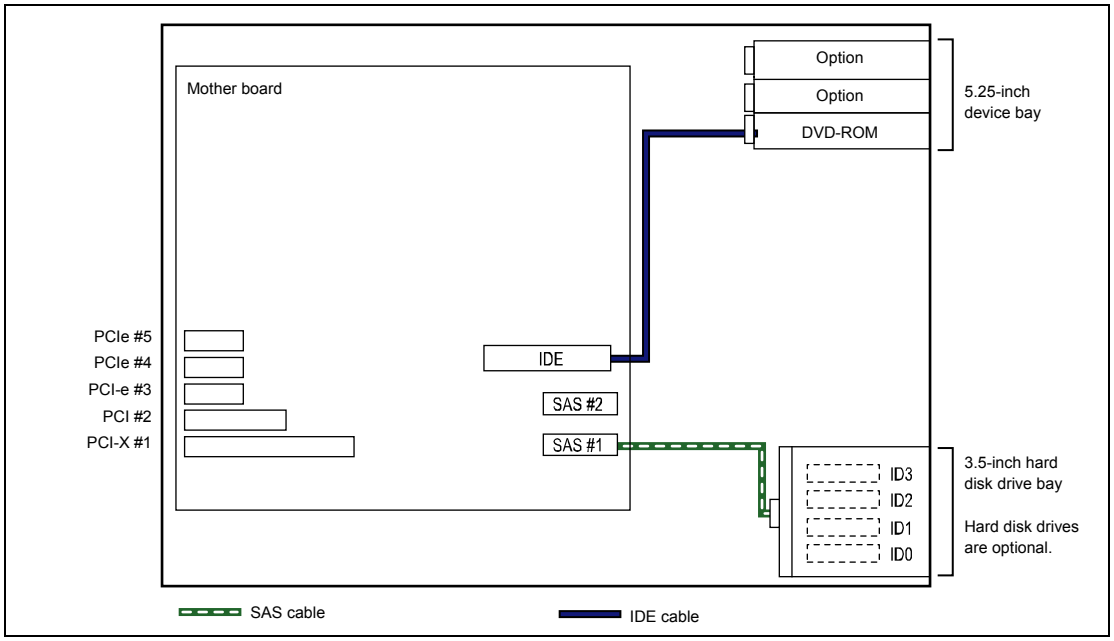
Internal cable connections of the server are shown below.

INTERFACE CABLES

An example of the connections of interface cables between devices within the server and external devices is shown below.

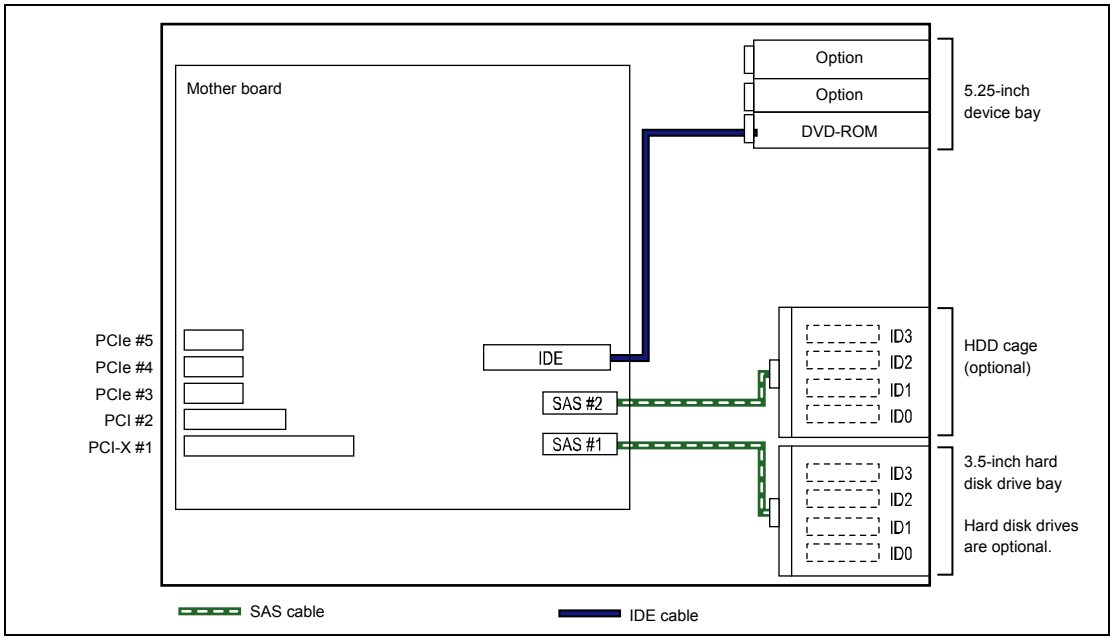
Standard Configuration

The figure below shows an example of the connections in the standard configuration. The onboard SAS #1 connector is connected to the hard disk drive bay.



Installing Additional HDD Cage

The figure below shows an example when five or more hard disk drives are to be connected. The onboard SAS #2 connector is connected to the additional HDD cage.



Installing Internal SCSI File Device

To install the internal SCSI file device, you need prepare a separately priced SCSI controller and SCSI cable.

IMPORTANT:

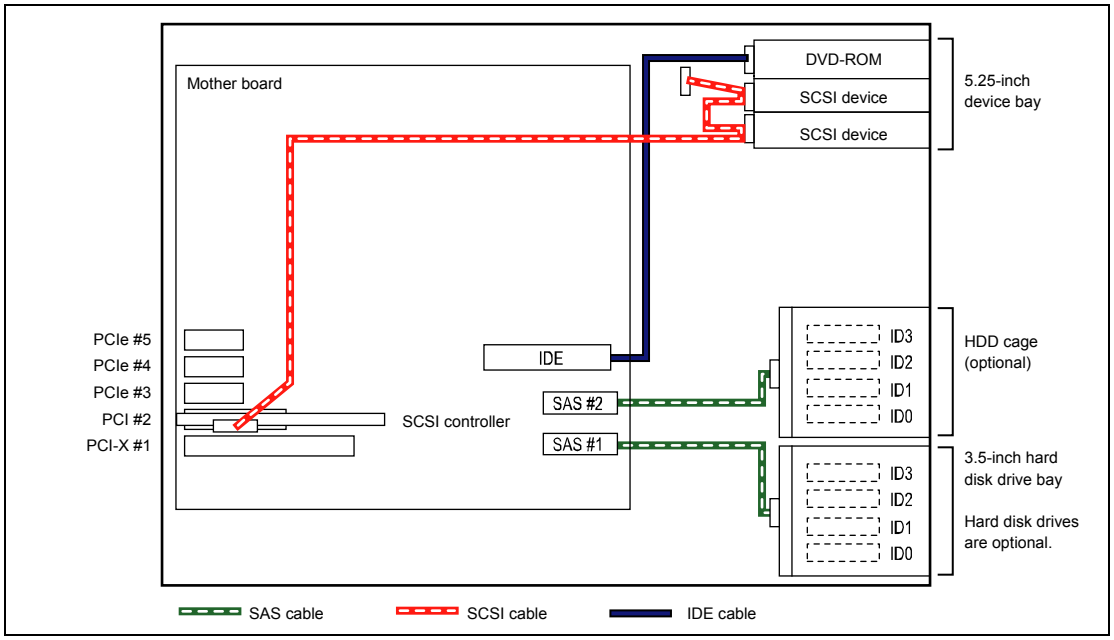
- Up to two SCSI devices can be installed in the server.
- To install two half-height SCSI devices in the 5.25-inch device bay, move the factory-installed DVD-ROM drive to the top bay.

SCSI controller: N8103-75F, N8103-95

SCSI cable: K410-68 internal SCSI cable

K410-68 internal SCSI cable is equipped with terminating resistor. Set "Disabled" for all the terminating resistors of connected devices. For other setting, refer to the manual provided with the device.

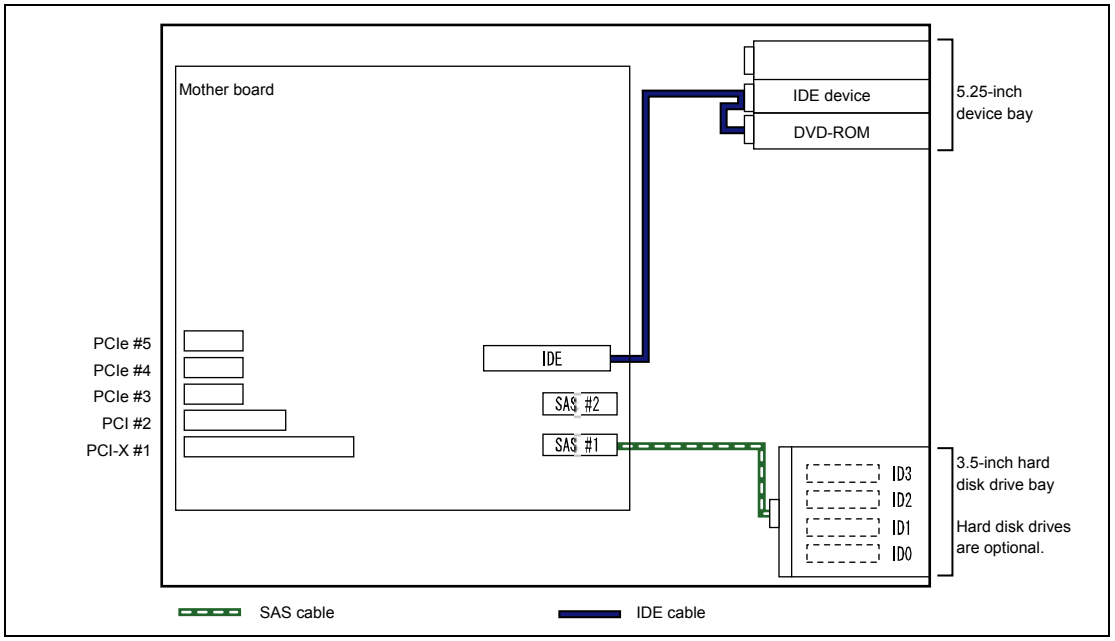
A file device needs settings such as a SCSI transfer rate. For the transfer rate, see the manual provided with the file device. Use the BIOS utility of the SCSI controller to make the settings. For details, see the manual provided with the SCSI controller.



Installing Internal DVD-RAM Drive

The internal DVD-RAM drive is an IDE device option. The server can be equipped with one internal DVD-RAM drive. Set the operation mode of optional DVD-RAM drive to "SLAVE". (The factory-installed DVD-RAM drive is set to "MASTER".)

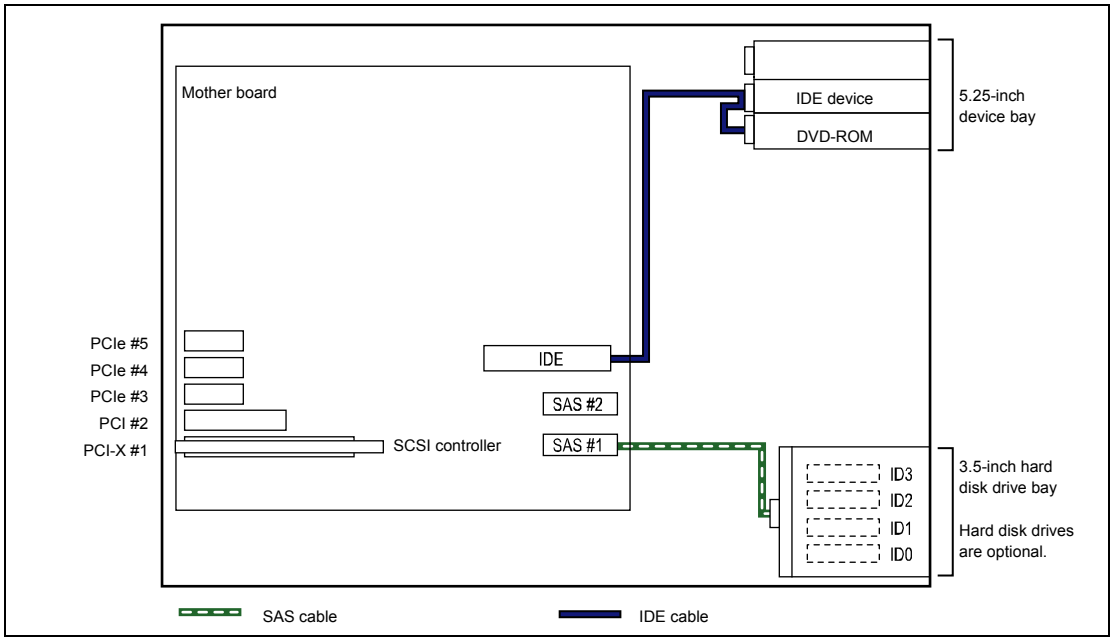
Use the cable connected to the onboard IDE connector. First connect the cable to internal DVD-RAM drive, and then to the factory-installed DVD-RAM drive.



Connecting with External SCSI Device

To install the internal SCSI file device, you need prepare a separately priced SCSI controller and SCSI cable.

Assign the unique SCSI ID to each device. Enable the terminating resistor of the last device of the connection. (If no device is connected, installing a terminating resistor on the rear connector is not required.) The total cable length (including internal cable) must be 3 m or shorter.



Connecting with Additional Disk Unit / Sample Connection in Maximum Configuration

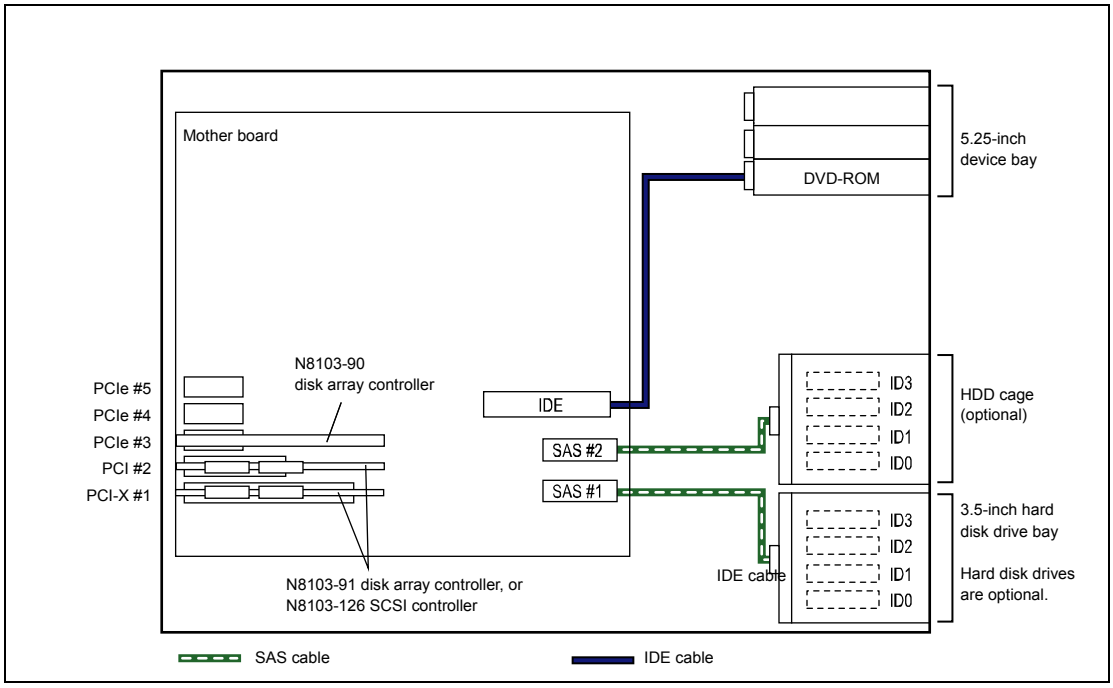
To connect an additional disk unit with the server, the disk array controller (N8103-81/90/126) is required.

> **IMPORTANT:** To connect with additional disk unit, use the server of rack-mount type, or use the additional disk unit of tower type (pedestal type). In both cases, you need an optional conversion kit.

The additional disk unit N8141-36F can be connected to the server equipped with the disk array controller board. (A single N8141-36F contains 14 hard disk drives. Up to two units can be connected.)

The server can be connected with up to 121 hard disk drives (9 hard disk drives internally installed and 6 units of additional disk unit (each unit can contain 14 hard disk drives).

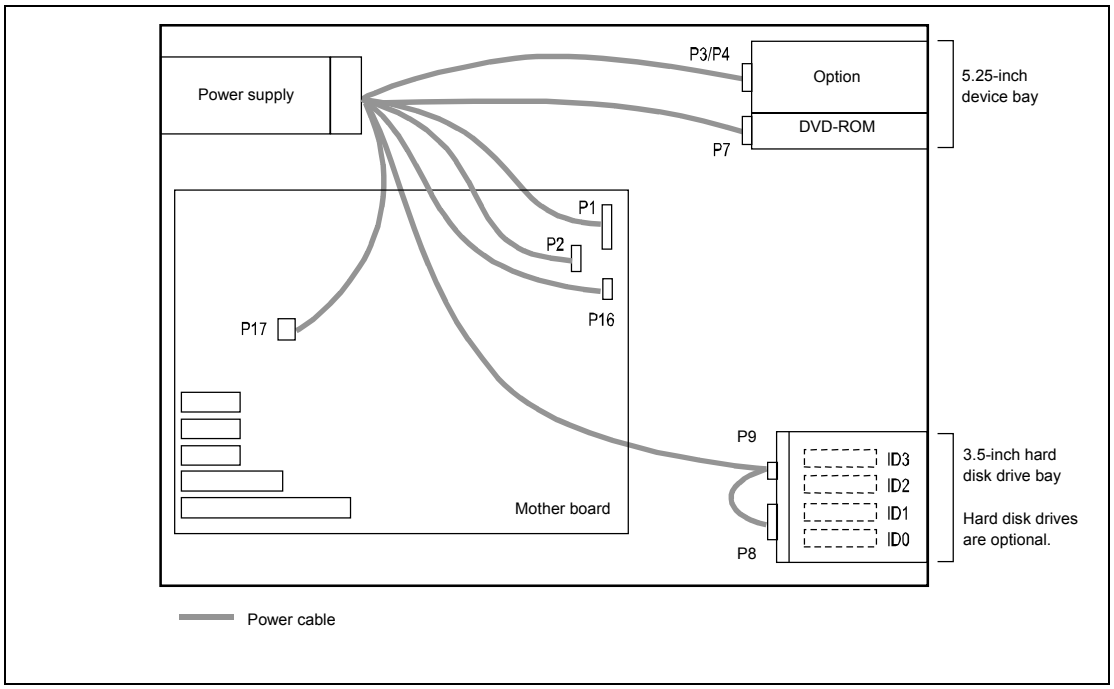
Four SCSI disk array controller boards are required to connect the server with additional disk unit. The server can be equipped up to four SCSI disk array controller board. Accordingly, in this configuration, the eight hard disk drives installed in hard disk drive bay and HDD cage are controlled by onboard RAID controller and used as RAID0 or RAID1 disk array, or a single SCSI device.



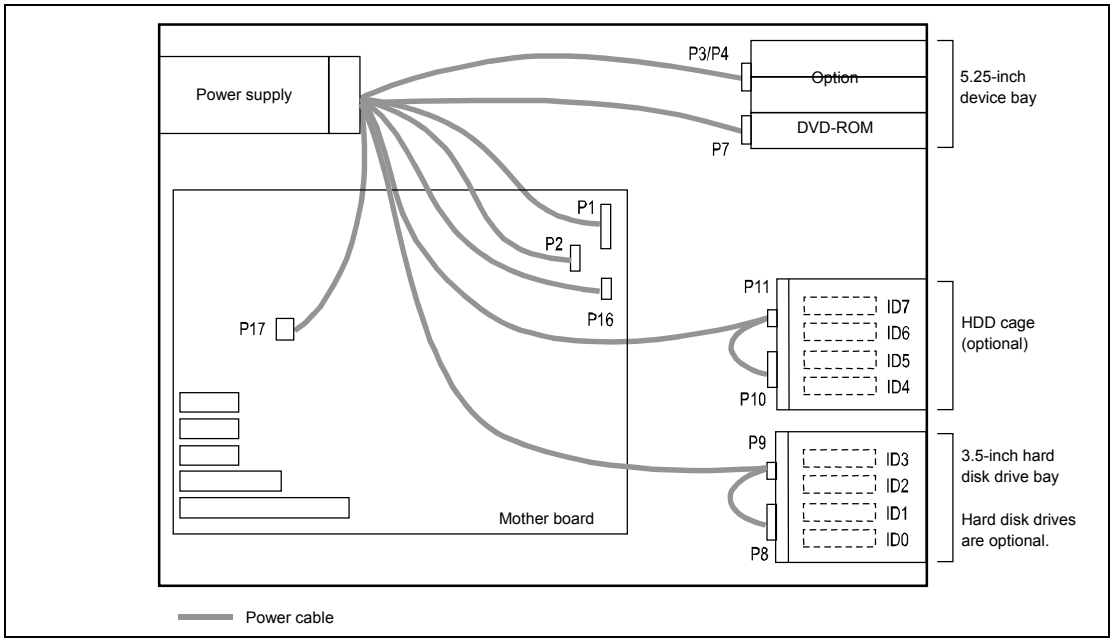
POWER CABLE

Proper connector numbers of format Pnn (nn: numeral) are printed on the power cables connected to the power unit installed in the server. The connector numbers and the internal devices to which the connectors are connected are shown in the figures below.

Standard Configuration



Installing HDD Cage



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Appendix A

Specifications

Item		NEC Express5800/120Li				
		N8100-1239F	**N8100-1240F**	**N8100-1325F**	**N8100-1326F**	**N8100-1298F**
CPU	Type	Dual-core 64-bit Intel® Xeon® processor (Extended memory 64 technology supported)				
	Clock/2nd cache	1.6GHz/4MB	3GHz/4MB	2GHz/4MB	2.33GHz/4MB	2.33GHz/8MB
	Standard	1				
	Maximum	2				
Chipset		Intel® 5000P (667 / 1066 MHz)				
Memory	Type	SDRAM DIMM (DDR2-533, Chipkill)				SDRAM DIMM (DDR2-667, Chipkill)
	Error check	ECC				
	Standard	2 GB (1 GB × 2)				
	Maximum	48 GB (4 GB × 12, the standard DIMM must be replaced.)				
Graphics (VRAM)		Server Engines Pilot GA (VRAM 2MB)				
Auxiliary storage device	Hard disk drive (standard)	None				
	Hard disk drive (maximum)	586 GB (146.5 GB × 4) 1.172 TB (146.5 GB × 8) when optional HDD cage is installed.				
	Hard disk drive (hot-plug)	Supported				
	Hard disk drive (disk controller)	SAS				
	Floppy disk drive (optional)	USB 3.5-inch floppy disk drive				
	DVD-ROM (standard)	ATAPI interface × 1 (x18 to x40 speed) DVD: x6 to x16 speed, CD: x20 to x48 speed				
5.25-inch file bay		3 slots (An ATAPI DVD-ROM drive is factory-installed.)				
3.5-inch disk bay		4 slots + 4 slots (optional)				
Additional PCI slot	PCI EXPRESS	3 slots				
	64-bit/100MHz	1 slot				
	32-bit/33MHz	1 slot				
LAN		1000Base-T / 100Base-TX / 10-Base-T (2 ports)				
Management LAN		100Base-TX / 10-Base-T (1 port)				
Disk array		RAID0 / RAID1 / Spanning of RAID1 (standard) / RAID5 (optional)				
External interface	Keyboard	MINI DIN 6-pin connector (1 port)				
	Mouse	MINI DIN 6-pin connector (1 port)				
	USB2.0	4-pin (4 ports, 2 at front, 2 at rear)				
	Serial	D-sub 9-pin (2 ports)				
	Parallel	IEEE1284 standard, D-sub 25-pin (1 port)				
	Network	RJ-45 (2 ports)				
	Display	MINI D-sub 15-pin (1 port)				
Cabinet design		Desk-side, mini tower				

Item		NEC Express5800/120Li				
		N8100-1239F	**N8100-1240F**	**N8100-1325F**	**N8100-1326F**	**N8100-1298F**
External dimensions		220 (width) × 453 (height) × 671 (depth) mm (stabilizers and projections excluded) 293 (width) × 453 (height) × 697 (depth) mm (stabilizers and projections included)				
Weight		22 kg (Max. 38 kg)				
Power supply	Specification	100 to 120 VAC ±10%, 200 to 240 VAC ±10%, 50/60 Hz ±1 Hz				
	Hot-swap	Supported				
Redundant fan		Supported (optional)				
Power consumption		630 VA, 620 W				700 VA, 690 W
Energy efficiency ratio		0.012 (class C)	0.0065 (class C)	0.0098 (class C)	0.0084 (class C)	0.0043 (class C)
Environmental requirements	Temperature	10 to 35°C (operating), –10 to 55°C (non-operating, storage)				
	Humidity	20 to 80% RH (no condensation)				

Appendix B

Other Precautions

Transfer Rate of the On-board LAN Controller

The onboard network interface controller supports 10Base-T and 100Base-TX networks and a capable of full or half duplex.

The controller can automatically detect and switch for network speed and transfer mode connected to the HUB. However, for proper network operation, specify the link speed and duplex mode to the same value as the value specified for HUB.

Server Management Software

The NEC EXPRESSBUILDER CD-ROM that comes with the server contains the NEC ESMPRO utility.

NEC recommends that you should install the NEC ESMPRO for effective use of the reliability enhancement features of the server.

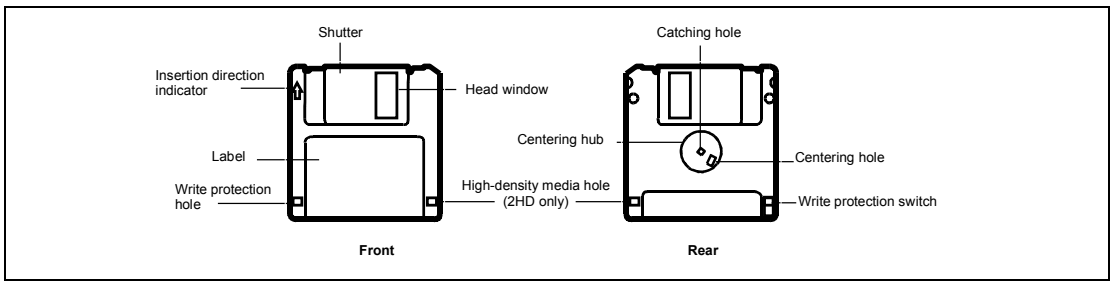
Floppy Disk

The following describes use of the floppy disk.

Floppy disk type

The server uses 3.5-inch floppy disks. You can use the following two types of 3.5-inch floppy disks:

- 2HD floppy disk (double-sided high-density track type)
  Stores data of 1.44MB.
- 2DD floppy disk (double-sided double-density track type)
  Stores data of 720KB.



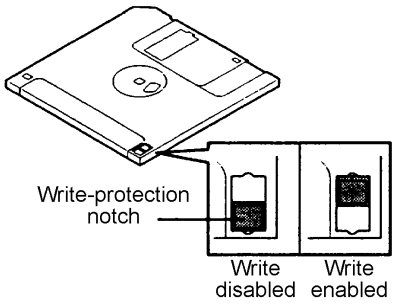
Notes on use

The floppy disk is an important data storage media with delicate structure and requires care. Keep the following notes in mind to use it:

- Insert the floppy disk into the floppy disk drive gently as far as it goes.
- Attach the label to the correct position.
- Do not write anything directly onto the disk surface with a pencil or ball-point pen.
- Do not open the shutter.
- Do not use the floppy disk in a dusty place.
- Do not place anything on the floppy disk.
- Do not leave the floppy disk in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- Do not leave the floppy disk with foods and drinks, or in a place exposed to cigarette smoke.
- Do not leave the floppy disk near any form of liquid or a chemical or in a place where a chemical may be accidentally sprayed over them.
- Do not place any magnetic objects (e.g., magnet) near the floppy disk.
- Do not clip the floppy disk or drop it.
- Keep the floppy disk in a floppy disk case that protects it from magnetism and dust.

- Write-protection

  A floppy disk has a write-protect switch that prevents the stored data from accidental erasure.



  You can read data from a write-protected floppy disk, but you cannot save data into the floppy disk or format it. NEC recommends that you should write-protect any floppy disk containing valuable data unless you are about to save data.

  To write-protect a 3.5-inch floppy disk, use the write-protect switch provided on its back.

- Disk format

  To write data into a floppy disk, the floppy disk must be "formatted." "Formatting" is to initialize the floppy disk and make it available for the system environment (operating system).

  IMPORTANT:

  - Formatting a used floppy disk clears all the data contained in it, if any.
  - Formatting a floppy disk from the DOS command line is not available with the server. Use a formatted floppy disk to work with it on the DOS command line.

  The format method depends on your operating system. Refer to the manual that comes with your operating system for details.

- Data backup

  "Data backup" is to copy data stored in a media into another media (e.g., floppy disk, digital audio tape, or magnet-optical disk).

  IMPORTANT: Make sure to make a back-up copy of every floppy disk, if provided.

  The floppy disk is a very delicate storage media. Dust or thermal changes, as well as operator's misconduct or server failures, may cause loss of data. To avoid loss of data, NEC recommends that you should make a back-up copy of your valuable data on a regular basis.

DVD/CD-ROM

Keep the following notes in mind to use the DVD/CD-ROM for the server:

- Press the center of the storage case to remove the DVD/CD-ROM from the case.
- Do not drop the DVD/CD-ROM.
- Do not place anything on the DVD/CD-ROM or bend the DVD/CD-ROM.
- Do not attach any label onto the DVD/CD-ROM.
- Do not touch the signal side (nothing is printed on this side) with your hand.
- Place the DVD/CD-ROM with its printed side upward and gently put it on the tray.
- Do not scratch the DVD/CD-ROM or write anything directly on it with a pencil or ball-point pen.
- Do not leave the DVD/CD-ROM with foods and drinks, or in a place exposed to cigarette smoke.
- Do not leave the DVD/CD-ROM in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- When dust or fingerprints are attached on the DVD/CD-ROM, wipe the DVD/CD-ROM from its center to edge with a dry soft cloth slowly and gently.
- Use the dedicated cleaner to clean the DVD/CD-ROM. Do not use record spray/cleaner, benzene, or thinner.
- Keep the DVD/CD-ROM in the dedicated case when not in use.

Tape Media

The following describes data handling with the DAT, DLT, or AIT optionally available for the server.

- Saving your valuable data

  When you save your valuable data or programs into the cartridge tape, you should save them into two cartridge tapes to make the primary and secondary tapes.

  This enables you to restore your data from one tape when the other makes a read error, as well as to protect your valuable data and programs from loss.

- Three-generation data management

  NEC recommends that you should employ three-generation data management for data storage.

  Three-generation data management uses three cartridge tapes: A, B, and C. You save data to tape A on the first day, tape B on the second day, tape C on the third day, tape A on the forth day, and so on. That is, you save data into cartridge tapes cyclically from tape A through C.

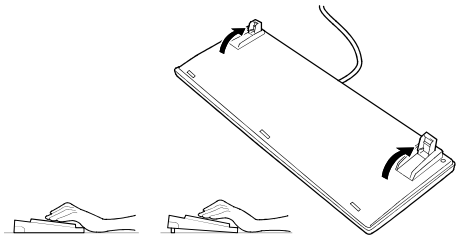
This enables you, for example, to use tape B to restore the data when tape C makes a read error. Also when both tapes B and C make a read error, you can restore your valuable data by using the data stored in tape A.

Keyboard

The keyboard is a device to instruct you computer by entering alphanumeric characters or symbols.

IMPORTANT:

- Do not pour any liquid such as water or put anything into the keyboard. Doing so may cause a failure of the keyboard.
- The keyboard provided with the server is designed for adjustment of an angle. Adjust the keyboard angle at which the keyboard is easy to operate. The adjustment assists in reducing strain on your shoulders, arms, and fingers.



NOTE: The keyboard functions depend on the software. Refer to the manual that comes with the software for details.

Mouse

Like the keyboard, the mouse is a device to instruct your computer. Many OS's and application software require the mouse for operation.

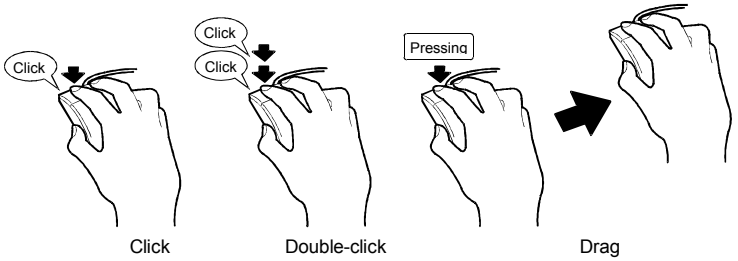
NOTE:

- Functions assigned to the mouse buttons vary depending on the software. For details, refer to the manual provided with the software.
- Use the mouse on a clean desk. Using the mouse on a dusty or dirty desk disturbs smooth movement or normal operation of the mouse. When your mouse movement seems dull, clean your mouse. (See Chapter 7.)

Mouse operation includes "Click," "Double-click," and "Drag."

Click:	Press the button only once and release it.
Double-click:	Press the button twice consecutively and release it.
Drag:	Press and hold the button and move the mouse.

Operation of the server involves combinations of these mouse operations and data entries with the keyboard.



Appendix C

IRQ and I/O Port Address

The factory-set interrupt requests and I/O port addresses are listed below. Find an appropriate one to install an optional device.

Interrupt Request

The factory-set IRQs are assigned as follows:

IRQ	Peripheral Device (Controller)	IRQ	Peripheral Device (Controller)
0	System timer	9	ACPI
1	–	10	PCI
2	–	11	BMC
3	Serial port COM2	12	–
4	Serial port COM1	13	Numeric coprocessor
5	PCI	14	Primary IDE
6	–	15	Secondary IDE
7	–	16	PCI
8	Real-time clock		

I/O Port Address

The factory-set I/O port addresses for the server are assigned as follows:

Address *1	Chip in Use *2
00 - 1F	DMA controller
20 - 2D	Interrupt controller
2E - 2F	Super I/O configuration
30 - 31	Interrupt controller
34 - 35	Interrupt controller
38 - 39	Interrupt controller
3C - 3D	Interrupt controller
40 - 43	Timer controller
4E - 4F	Super I/O configuration
50 - 53	Timer/counter
61	NMI
62	LPC reserve
63	NMI
70 - 77	NMI/real-time clock
80 - 91	DMA controller
92	Port 92
93 - 9F	DMA controller
A0 - A1	Interrupt controller
A4 - A5	Interrupt controller
A8 - A9	Interrupt controller
AC - AD	Interrupt controller
B0 - B1	Interrupt controller
B2 - B3	Advanced power management
B4 - B5	Interrupt controller
B8 - B9	Interrupt controller
BC - BD	Interrupt controller
C0 - DF	DMA controller
F0	Coprocessor error
F1 - FF	Logic device configuration
170 - 177	IDE secondary bus controller
1F0 - 1F7	IDE primary bus controller
2F8 - 2FF	Serial port 2
376	IDE secondary bus controller
3F0 -3F5	Floppy disk drive 1
3F6	IDE primary bus controller
4D0 -4D1	Interrupt controller
CA2 - CA3	BMC SMS interface
CA4 - CA5	BMC SMS interface
CF8 - CFB	PCI configuration address/reset control (CF9)
CFC - CFF	PCI configuration data

*1 Hexadecimal notation
*2 I/O port address for PCI devices can be arbitrarily assigned according to the type and number of PCI devices.

Appendix D

Installing Windows Server 2003 x64 Editions

This section explains how to install the Windows Server 2003 x64 Editions.

BEFORE INSTALLING Windows Server 2003 x64 Editions

Read the following notes or information before installing the Windows Server 2003 x64 Editions.

Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER CD-ROM attached to your server supports the following optional boards;

> **NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-FD for Mass storage device"), except ones listed below, see "Installing with the OEM-FD for Mass storage device" and "Installing Optional Mass Storage Driver" of "Configuration Diskette Creator" in Chapter 6.

- Supporting installation of OS in NEC EXPRESSBUILDER
  - N8103-91 Disk Array Controller (Internal SAS HDD)
  - N8103-99 Disk Array Controller (0ch)
  - LSI Logic Embedded MegaRAID™ (Controller on the I/O board)
- Other optional boards
  - N8103-80F Disk Array Controller (SCSI 1ch)
  - N8103-81F Disk Array Controller (SCSI 2ch)
  - N8103-75 SCSI Controller
  - N8103-95 SCSI Controller
  - N8190-126 SCSI Controller

Installing Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

Updating System

If you modified the Windows system, execute "Update Express5800 system" in Master Control Menu.

Re-installing to the Hard Disk Drive which has been Upgraded to Dynamic Disk

If you want to leave the existing partition when installing the system on the hard disk drive upgraded to Dynamic Disk, note the following issue:

- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

Manual Installation when N8103-80F/81F Keeps Connection

If you keep those controllers connecting during installation process, pop-up messages may appear. This does not affect on system behavior. Click [YES] and continue the installation. Follow the message hereafter.

Mounting MO Device

Do not mount an MO device on your server during the Windows installation.

About Removable Media

Do not set removable media, such as DAT, into the device mounted on your server during the OS installation.

Creating Partition Size

The size for the partition that the system is to be installed can be calculated from the following formula.

Size necessary to install the system	+ Paging File Size + Dump File Size + Application Size
Size necessary to install the system	= 4100MB
Paging File Size (Recommended)	= Mounted Memory Size * 1.5
Dump file Size	= Mounted Memory Size + 1MB
Application Size	= Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 1MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

4100MB + (512MB * 1.5) + (512MB + 1MB) + Application Size
= 5381MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

INSTALLING WINDOWS SERVER 2003 X64 EDITIONS

Preparations for Installation

- NEC EXPRESSBUILDER CD-ROM
- Microsoft Windows Server 2003 R2 Standard x64 Edition (CD-ROM) / Microsoft Windows Server 2003 R2 Enterprise x64 Edition (CD-ROM)
- User's Guide
- Getting Started
- Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER

Creating "Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER"

Before installing, create Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER.

> **NOTE:** If you have already "Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003 x64 Edition, you do not need to create it again.

You can create Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER with the following two procedures.

- Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.

  If you have only NEC Express5800 Server to create Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER, use this procedure.

  If Windows Server 2003 can be operated on NEC Express5800 Server, you can use the other procedure described later.

  Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive of the server.
4. Press the RESET switch or press **Ctrl** + **Alt** + **Delete** to reboot the server .(You may also turn off and then on again to reboot the server.)

   The system will boot from the CD-ROM and NEC EXPRESSBUILDER starts.
5. Select [Create Support Disk] from [Tools].
6. Select [Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER] from [Create Support Disk] menu.

7. Insert a floppy disk into the floppy disk drive according to the instruction on the screen.

   Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

■ Create from [Master Control Menu]

[Master Control Menu] runs on the following operating systems.

– Windows Server 2003 x64 Editions
– Windows Server 2003
– Windows XP x64 Edition
– Windows XP
– Windows 2000
– Windows Me/98/95
– Windows NT 4.0

You can create Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER from [Master Control Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Run the operating system.
3. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive of the server.

   [Master Control Menu] will appear.

4. Click on [Setup] with left mouse button and click [Make OEM-DISK] and then [for Windows Server 2003 x64 Edition].

   NOTE: You can do the same operation with the menu appeared by the Right-click.

5. Insert the floppy disk into the floppy disk drive according to the message.

   Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Windows Server 2003 x64 Editions Clean Installation

This section explains how to perform a clean installation of Windows Server 2003 x64 Editions.

1. Turn on the system power.
2. Insert the Windows Server 2003 x64 Edition CD-ROM into the DVD-ROM drive.
3. Press **Ctrl** + **Alt** + **Delete** to reset the system.

   After a bootable operating system has been installed on the hard disk drive, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

   If no bootable operating system exists on the hard disk drive, this step is unnecessary.

   The Windows Server 2003 x64 Editions setup screen will appear.

   If the screen is not displayed, **Enter** was not pressed properly.

   Begin after turning on the system power again.
4. If the RAID controller or SCSI controller is installed in the system, press **F6** in a few seconds when the window is in either of the following states.
   - "Setup is inspecting your computer's hardware configuration ..." is displayed.
   - A screen with a solid blue background is displayed.

   IMPORTANT: There is no visible indication on screen when **F6** has been pressed.
5. When the following message is displayed, press **S**.

   ```
   Setup could not determine the type of one or more mass storage devices
   installed in your system, or you have chosen to manually specify an adapter.
   Currently, Setup will load support for the following mass storage devices.
   ```

   The following message is displayed.

   ```
   Please insert the disk labeled
   manufacturer-supplied hardware support disk
   into Drive A:
   *Press ENTER when ready.
   ```
6. Insert the Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

   Select the [LSI Logic Fusion-MPT SAS Driver (Server 2003 x64)] and press **Enter**.

7. Select the proper SCSI Adapter and press **Enter**.

   – [LSI Logic MegaRAID SAS RAID Controller Driver (Server 2003 for x64)]
   (When N8103-91 board is installed.)

   – [LSI Logic MegaRAID SAS RAID Controller Driver (Server 2003 for x64)]
   (When N8103-99 board is installed.)

   – [LSI MegaRAID Software RAID (Windows XP/2003 64-bit)]
   (When LSI Logic Embedded MegaRAID ™ is installed.)

   Continue performing tasks according to the subsequent messages that appear.

8. When the following message is shown, press **Enter** to start "Welcome to Setup".

9. When the installation of Windows Server 2003 x64 Edition has finished, the system reboots automatically.

10. The [Windows setup] screen will be displayed after logged on to the system.

Windows Setup
Windows Setup is not complete. We recommend that you continue Setup so that you can install the additional components that are available in this version of the Windows Server operating system.
For more information about the new components, see the documentation on Windows Server CD 2.
To continue Setup, insert Windows Server CD 2, or specify the location where the Windows Server CD 2 files are stored, and then click OK.
Location of Windows Server CD 2 files:
D:\
Browse...
OK
Cancel

IMPORTANT:

- In this case, the [Windows setup] screen may not be displayed.
  Be sure to install Microsoft Windows Server 2003 R2 x64 Edition DISC 2 according to the following procedures.
- You can install Microsoft Windows Server 2003 R2 x64 Edition DISC 2 after the application of "System update".
  Be sure to install Microsoft Windows Server 2003 R2 x64 Edition DISC 2.
  In this case, note that the [Windows setup] screen is not displayed.

11. Insert Microsoft Windows Server 2003 R2 x64 Edition DISC 2 CD-ROM into the DVD-ROM drive.

Confirm the parameters and click [OK].

12. When the installation has completed, remove Microsoft Windows Server 2003 R2 x64 Edition DISC 2 CD-ROM from the DVD-ROM drive, and restart the system.

After installation is completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of this manual.

Reinstallation to Multiple Logical Drives

This subsection describes the procedure for reinstalling the operation system if the multiple logical drives exist.

Before Re-installing the Operation System

Be sure to make backup copies before re-installing the operation system just in case.

Re-installing the Operation System

1. Start the clean installation following the procedure described in this manual.
2. Specify the partition in which you want to install the operating system when the following message appears:

   ```
   The following list shows the existing partitions and
   unpartitioned space on this computer.

   Use the UP and DOWN ARROW keys to select an item in the list.
   ```

   * Cannot modify the drive letter of your system or boot volume. Confirm the proper drive letter is assigned and then, continue the setup.

3. Continue the clean installation again following the procedure described earlier in this chapter.

   The drive letter of the re-installed system may differ from the one of the previous system. If you need to modify the drive letter, modify it according to the "Procedure for Modifying the Drive Letter".

Procedure for Modifying the Drive Letter

Be careful that the drive letter of the system or boot volume cannot modify with the following procedure.

1. Click Start menu, right-click [My Computer], and specify [Manage] to start [Computer Management].
2. Specify the [Disk Management] in the left side of the window.
3. Right-click the volume you want to modify the drive letter and specify the [Change Drive Letter and Path...].
4. Click [Yes].
5. Choose the [Assign a drive letter] and specify the drive letter you want to assign.
6. Click [OK].
7. If the following message appears, click [Yes].

   > Changing the drive letter of a volume may cause programs to no longer run. Are you sure you want to change this drive letter?

8. Close the [Computer Management].

Updating the System

To ensure normal system operation you should update your system using the following procedures.

1. Logon to the system using the administrator account or other account which is a member of the Administrators group.
2. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.

   Master Control Menu is automatically appeared on the screen.
3. Click on [Setup] with left mouse button and click on [Update NEC Express5800 system] section.
4. Continue your work for system update as the following message.
5. Click on [OK] to restart the system.
6. Remove the NEC EXPRESSBUILDER CD-ROM from the DVD-ROM drive immediately after clicking on [OK]

IMPORTANT: If you change the configuration of the system (by adding or removing hardware or Operating system software components) or repair the system, you must run the system update again.

DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

PROSet

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhances throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.
2. The [Windows Explorer] dialog starts.

   * The procedure in the case of the standard start menu

     Click Start menu and click [Windows Explorer].

   * The procedure in the case of the classic start menu

     Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "DXSETUP.EXE" in the following directory.

   DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PROSET\WS03_32E

   The [Intel® PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Choose "Complete" and click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finish].
9. Restart the system.

Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhance the through put by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

IMPORTANT:

- AFT/ALB setup must be operated after installing the drivers and restarting the system.
- All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.

If you want to utilize AFT/ALB feature, follow the procedure below to setup.

1. The [Intel (R) PROSet] dialog box appears.

   * The procedure in the case of the standard start menu

     Click Start menu, point to [Control Panel], [administrative tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.

   * The procedure in the case of the classic start menu

     1. Click Start menu, point to [Settings] and click [Control Panel].
     2. Click [administrative tools].
     3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.

2. Select [Teaming] tab and then check on [Team with other adapters]and click [New Team...].

   The [New Team Wizard] dialog box appears and click [Next]

   * Specify a name for the team if it necessary.

3. Select the adapters to include in team.
4. Select "Adapter Fault Tolerance" or "Adaptive Load Balancing" and click [Next].
5. Click [Finish].
6. The setup will go back to [Intel (R) PROSet for Wired Connections] dialog box, so click [OK].
7. Restart the system.

Network Driver

Specify the details of network driver.

One standard network driver that is mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

IP addresses is not able to set when the "Internet Protocol (TCP/IP)" check box OFF.

This phenomenon will occur with the certain condition.

Check ON the "Internet Protocol (TCP/IP)" check box and IP address will be able to set.

[When PROSet is not installed]

1. The [Local Area Connection Properties] dialog box appears.

   * The procedure in the case of the standard start menu

     1) Click Start menu, click [Control Panel], click [Network Connections], and click [Local Area Connection].

   * The procedure in the case of the classic start menu

     1) Click Start menu, click [Settings] and click [Network Connections].

        The [Network Connections] dialog box appears.

     2) Right-click [Local Area Connection] and click [Properties] from pop-up menu.

2. Click [Configure].

   The property dialog box for network adapter appears.

3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.

4. Click [OK] on the property dialog box for network adapter.

[When PROSet is installed]

1. The [Intel(R) PROSet] dialog box appears.

   * The procedure in the case of the standard start menu

     Click Start menu, point to [Control Panel], [administrative tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.

   * The procedure in the case of the classic start menu

     1. Click Start menu, point to [Settings] and click [Control Panel].
     2. Click [administrative tools].
     3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.

2. Click the [Link] and specify the [Speed and Duplex] value the same as the value specified for HUB.
3. Click [Apply] and click [OK].

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

NOTE: We recommend you to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setting for Solving Problems" described later in this chapter.

Re-install the Network Driver

The network driver will be installed automatically.

Re-install the Optional Network Board Driver

If you want to utilize optional Network Board (N8104-112/119/111/86/120/121), the network driver will be installed automatically. Therefore, the driver attached to the Network board should not be used.

If you want to utilize optional Network Board (N8104-86/111), install the driver stored in NEC EXPRESSBUILDER CD-ROM.

In case of utilizing (N8104-86/111)

"DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO100\WS3XPX64"

In case of utilizing (N8104-112/119/120/121)

"DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO1000\WS3XPX64"

If the procedure of installation is not clear, refer to the installation procedure described in the section "Installation of the Optional Network Board Driver".

Installation of the Optional Network Board Driver

1. Start Device Manager.
2. Click [Network adapters] and double-click [(Network Adapter Name)].

   [(Network Adapter Name) Properties] appears.

   NOTE: [(Intel (R) PRO/1000...)] is the name of On-Board adapter. All other names show the Optional Network Board.

3. Click [Driver] tab and click [Update Driver...].

   [Hardware Update Wizard] appears.
4. Select the [Install from a list or specific location (Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and check off the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(N8104-86/111)], specify
   [DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO100\WS3XPX64].

   Then click [Next].

   When using [(N8104-112/119/120/121)], specify
   [DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO1000\WS3XPX64].

   Then click [Next].
7. Click [Finish].

Graphics Accelerator Driver

The graphics accelerator driver will be automatically installed by Express Setup or system update.

> **NOTE:** Please refer to the following <reinstalling> when the graphics accelerator driver is deleted, and reinstalled after OS is installed.

<About the driver of graphics accelerator (N8105-45)>

When graphics accelerator (N8105-45) board is installed or it separates, the deletion of the graphics accelerator driver which has already been installed is necessary.

The procedure is as follows.

1. Click Start menu, point to [Setting] and click [Control Panel].
2. Click [Add/Remove Programs].
3. Select the graphics accelerator driver from the program list and click "Change/Remove".

   To delete a standard graphics accelerator driver, select:
   [Matrox Graphics Software (remove only)]

   To delete a graphics accelerator (N8105-45) driver, select:
   [ATI Display Driver]

   > **NOTE:** Please choose the graphics accelerator driver which has already been installed.

4. Follow the message to continue the uninstallation and restart the system.
5. Installing graphics accelerator driver.

   Manually installation:
   Make installation in the way of "Reinstallation of graphics accelerator driver"

   Automatic installation:
   You should execute the system update again referring to "Updating the system".

   End of installation.

<Reinstallation of graphics accelerator driver>

1. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.
2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "SETUP.EXE" which is in the following directory.

   To install a standard graphics accelerator driver:

   <DVD-ROM Drive Letter>:\WINNT\W2K3AMD\VIDEO\MATROX\SETUP.EXE.

   To install a graphics accelerator (N8105-45) driver:

   <DVD-ROM Drive Letter>:\WINNT\W2K3AMD\VIDEO\ES1000\SETUP.EXE.

   NOTE: Please choose one of above to be installed.

4. Follow the message to continue the installation.

   If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.

5. Remove the NEC EXPRESSBUILDER CD-ROM from the DVD-ROM drive, and restart the system.

   End of installation.

Optional Network Board Driver

If you want to utilize optional Network Board (N8104-112/119/111/86/120/121), the network driver will be installed automatically. Therefore, the driver attached to the Network board should not be used.

If you want to utilize optional Network Board (N8104-86/111), install the driver stored in NEC EXPRESSBUILDER CD-ROM.

In case of utilizing (N8104-86/111)

"DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO100\WS03_32E"

In case of utilizing (N8104-112/119/120/121)

"DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO1000\WS03_32E"

If the procedure of installation is not clear, refer to the installation procedure described in the section "Installation of the Optional Network Board Driver".

Installation of the Optional Network Board Driver

1. Start Device Manager.
2. Click [Network adapters] and double-click [(Network Adapter Name)].

   [(Network Adapter Name) Properties] appears.

   NOTE: [(Intel(R) PRO/1000...)] is the name of On-Board adapter. All other names show the Optional Network Board.

3. Click [Driver] tab and click [Update Driver...].

   [Hardware Update Wizard] appears.

4. Select the [Install from a list or specific location (Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and check off the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(N8104-86/111)], specify
   [DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO100\WS03_32E].

   Then click [Next].

   When using [(N8104-112/119/120/121)], specify
   [DVD-ROM Drive Letter:\WINNT\W2K3AMD\NS4\PRO1000\WS03_32E].

   Then click [Next].
7. Click [Finish].

Installing SCSI Controller Driver (N8103-75)

If you utilize SCSI controller driver (N8103-75), update your system with NEC EXPRESSBUILDER CD-ROM attached to your system.

The SCSI controller driver will be installed automatically.

Installing SCSI Controller Driver (N8103-95/N8190-126)

The SCSI controller driver will be installed automatically.

Installing Disk Array Controller Driver (N8103-80F/81F)

To additionally install the N8103-80F/81F in a system containing Windows Server 2003 x64 Edition, connect the controller and take the following steps to install the driver:

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools] → [Computer Management].
2. Double-click [LSI Logic Megaraid SCSI 320-1/2] which Device Manager lists.
3. Click the [Driver] tab and click [Update Driver...].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select the "Search for the best driver in these locations." and check the "Search removable media [floppy, CD-ROM...]" check box.
6. Insert "Windows Server 2003 x64 Edition OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, and click [Next].
7. Copying of the driver is completed, and the [Completing the Hardware Update Wizard] dialog box below appears. Click [Finish].

SETTING FOR COLLECTING MEMORY DUMP (DEBUG INFORMATION)

Set for collecting memory dump using the procedure described in Chapter 5.

Appendix E

Installing Windows Server 2003

This section explains how to install the Windows Server 2003.

BEFORE INSTALLING WINDOWS SERVER 2003

Read the following notes or information before installing the Windows Server 2003.

Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER CD-ROM attached to your server supports the following optional boards;

> **NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-FD for Mass storage device"), except ones listed below, see "Installing with the OEM-FD for Mass storage device" and "Installing Optional Mass Storage Driver" of "Configuration Diskette Creator" in Chapter 6.

- Supporting installation of OS in NEC EXPRESSBUILDER
  - N8103-91 Disk Array Controller (Internal SAS HDD)
  - N8103-99 Disk Array Controller (0ch)
  - LSI Logic Embedded MegaRAID™ (Controller on the I/O board)
- Other optional boards
  - N8103-80F Disk Array Controller (SCSI 1ch)
  - N8103-81F Disk Array Controller (SCSI 2ch)
  - N8103-75 SCSI Controller
  - N8103-95 SCSI Controller
  - N8190-126 SCSI Controller

Installing Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

Updating System

If you modified the Windows system, execute "Update Express5800 system" in Master Control Menu.

Re-installing to the Hard Disk Drive which has been Upgraded to Dynamic Disk

If you want to leave the existing partition when installing the system on the hard disk drive upgraded to Dynamic Disk, note the following issue:

- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

Manual Installation when N8103-80F/81F Keeps Connection

If you keep those controllers connecting during installation process, pop-up messages may appear. This does not affect on system behavior. Click [YES] and continue the installation. Follow the message hereafter.

Mounting MO Device

Do not mount an MO device on your server during the Windows installation.

About Removable Media

Do not set removable media, such as DAT, into the device mounted on your server during the OS installation.

Application of Service Pack

When using Windows Server 2003 with this equipment, surely apply ServicePack 1. When installing Windows Server 2003 R2, it is not necessary to apply Service Pack 1.

Creating Partition Size

The size for the partition that the system is to be installed can be calculated from the following formula.

Size necessary to install the system	+ Paging File Size + Dump File Size + Application Size
Size necessary to install the system	= 3500MB (Windows Server 2003 R2) 3500MB (Windows Server 2003 with Service Pack1) 4400MB (Windows Server 2003 + Service Pack1 CD-ROM)
Paging File Size (Recommended)	= Mounted Memory Size * 1.5
Dump file Size	= Mounted Memory Size + 12MB
Application Size	= Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

3500MB + (512MB * 1.5) + (512MB + 12MB) + Application Size
= 4792MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

INSTALLING WINDOWS SERVER 2003

Preparations for Installation

- NEC EXPRESSBUILDER CD-ROM
- Microsoft Windows Server 2003 Standard Edition (CD-ROM)/ Microsoft Windows Server 2003 Enterprise Edition (CD-ROM), Microsoft Windows Server 2003 R2 Standard Edition (CD-ROM)/ Microsoft Windows Server 2003 R2 Enterprise Edition (CD-ROM)
- Windows Server 2003 Service Pack (CD-ROM)
- User's Guide
- Getting Started
- Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER

Creating "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER"

Before installing, create Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER.

> **NOTE:** If you have already "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003, you do not need to create it again.

You can create Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER with the following two procedures.

- Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.

  If you have only NEC Express5800 Server to create Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER, use this procedure.

  If Windows Server 2003 can be operated on NEC Express5800 Server, you can use the other procedure described later.

  Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive of the server.
4. Press the RESET switch or press **Ctrl** + **Alt** + **Delete** to reboot the server .(You may also turn off and then on again to reboot the server.)

   The system will boot from the CD-ROM and NEC EXPRESSBUILDER starts.
5. Select [Create Support Disk] from [Tools].

6. Select [Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER] from [Create Support Disk] menu.
7. Insert a floppy disk into the floppy disk drive according to the instruction on the screen.

   Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

■ Create from [Master Control Menu]

[Master Control Menu] runs on the following operating systems.

- Windows Server 2003 x64 Editions
- Windows Server 2003
- Windows XP x64 Edition
- Windows XP
- Windows 2000
- Windows Me/98/95
- Windows NT 4.0

You can create Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER from [Master Control Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Run the operating system.
3. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive of the server.

   [Master Control Menu] will appear.
4. Click on [Setup] with left mouse button and click [Make OEM-DISK] and then [for Windows Server 2003].

   NOTE: You can do the same operation with the menu appeared by the Right-click.

5. Insert the floppy disk into the floppy disk drive according to the message.

   Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Windows Server 2003 Clean Installation

This section explains how to perform a clean installation of Windows Server 2003.

1. Turn on the system power.
2. Insert the Windows Server 2003 CD-ROM into the DVD-ROM drive.
3. Press **Ctrl** + **Alt** + **Delete** to reset the system.

   After a bootable operating system has been installed on the hard disk drive, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

   If no bootable operating system exists on the hard disk drive, this step is unnecessary.

   The Windows Server 2003 setup screen will appear.

   If the screen is not displayed, **Enter** was not pressed properly.

   Begin after turning on the system power again.
4. If the RAID controller or SCSI controller is installed in the system, press **F6** in a few seconds when the window is in either of the following states.
   - "Setup is inspecting your computer's hardware configuration ..." is displayed.
   - A screen with a solid blue background is displayed.

   IMPORTANT: There is no visible indication on screen when **F6** has been pressed.
5. When the following message is displayed, press **S**.

   ```
   Setup could not determine the type of one or more mass storage devices
   installed in your system, or you have chosen to manually specify an adapter.
   Currently, Setup will load support for the following mass storage devices.
   ```

   The following message is displayed.

   ```
   Please insert the disk labeled
   manufacturer-supplied hardware support disk
   into Drive A:
   *Press ENTER when ready.
   ```
6. Insert the Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

   Select the [LSI Logic Fusion-MPT SAS Driver (Server 2003 32-bit)] and press **Enter**.

7. Select the proper SCSI Adapter and press **Enter**.

   – [LSI Logic MegaRAID SAS RAID Controller Driver (Server 2003 32-bit)]
   (When N8103-91 board is installed.)

   – [LSI Logic MegaRAID SAS RAID Controller Driver (Server 2003 32-bit)]
   (When N8103-99 board is installed.)

   – [LSI MegaRAID Software RAID (Windows XP/2003)]
   (When LSI Logic Embedded MegaRAID ™ is installed.)

   Continue performing tasks according to the subsequent messages that appear.

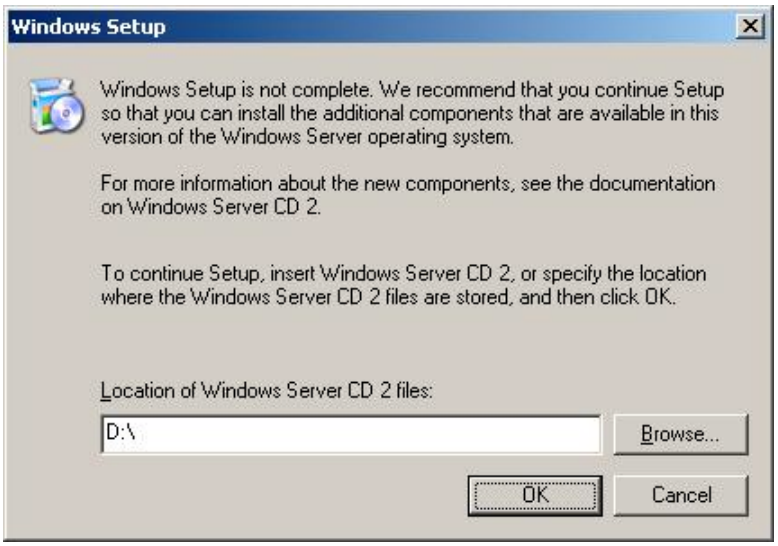
8. When the following message is shown, press **Enter** to start "Welcome to Setup".

9. When the installation of Windows Server 2003 has finished, the system reboots automatically.

   – Windows Server 2003 has installed: Go on the step 13

   – Windows Server 2003 R2 has installed: Go on the step 10

10. When Windows Server 2003 R2 has been installed, the [Windows Setup] screen will be displayed after logged on to the system.


Windows Setup
Windows Setup is not complete. We recommend that you continue Setup so that you can install the additional components that are available in this version of the Windows Server operating system.
For more information about the new components, see the documentation on Windows Server CD 2.
To continue Setup, insert Windows Server CD 2, or specify the location where the Windows Server CD 2 files are stored, and then click OK.
Location of Windows Server CD 2 files:
D:\
Browse...
OK
Cancel

IMPORTANT:

- In this case, the [Windows setup] screen may not be displayed.
  Be sure to install Microsoft Windows Server 2003 R2 DISC 2 according to the following procedures.
- You can install Microsoft Windows Server 2003 R2 DISC 2 after the application of "System update".
  Be sure to install Microsoft Windows Server 2003 R2 DISC 2.
  In this case, note that the [Windows setup] screen is not displayed.

11. Insert Microsoft Windows Server 2003 R2 DISC 2 CD-ROM into the DVD-ROM drive.

Confirm the parameters and click [OK].

12. When the installation has completed, remove Microsoft Windows Server 2003 R2 DISC 2 CD-ROM from the DVD-ROM drive, and restart the system.

13. When the installation has completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of manual.

Reinstallation to Multiple Logical Drives

This subsection describes the procedure for reinstalling the operation system if the multiple logical drives exist.

Before Re-installing the Operation System

Be sure to make backup copies before re-installing the operation system just in case.

Re-installing the Operation System

1. Start the clean installation following the procedure described in this manual.
2. Specify the partition in which you want to install the operating system when the following message appears:

   ```
   The following list shows the existing partitions and
   unpartitioned space on this computer.

   Use the UP and DOWN ARROW keys to select an item in the list.
   ```

   * Cannot modify the drive letter of your system or boot volume. Confirm the proper drive letter is assigned and then, continue the setup.

3. Continue the clean installation again following the procedure described earlier in this chapter.

   The drive letter of the re-installed system may differ from the one of the previous system. If you need to modify the drive letter, modify it according to the "Procedure for Modifying the Drive Letter".

Procedure for Modifying the Drive Letter

Be careful that the drive letter of the system or boot volume cannot modify with the following procedure.

1. Click Start menu, right-click [My Computer], and specify [Manage] to start [Computer Management].
2. Specify the [Disk Management] in the left side of the window.
3. Right-click the volume you want to modify the drive letter and specify the [Change Drive Letter and Path...].
4. Click [Yes].
5. Choose the [Assign a drive letter] and specify the drive letter you want to assign.
6. Click [OK].
7. If the following message appears, click [Yes].

   > Changing the drive letter of a volume may cause programs to no longer run. Are you sure you want to change this drive letter?

8. Close the [Computer Management].

Updating the System

To ensure normal system operation you should update your system using the following procedures.

1. Logon to the system using the administrator account or other account which is a member of the Administrators group.
2. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.

   Master Control Menu is automatically appeared on the screen.
3. Click on [Setup] with left mouse button and click on [Update NEC Express5800 system] section.
4. Continue your work for system update as the following message.
5. Click on [OK] to restart the system.
6. Remove the NEC EXPRESSBUILDER CD-ROM from the DVD-ROM drive immediately after clicking on [OK].

IMPORTANT: If you change the configuration of the system (by adding or removing hardware or Operating system software components) or repair the system, you must run the system update again.

DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

PROSet

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhance throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.
2. The [Windows Explorer] dialog starts.

   * The procedure in the case of the standard start menu

     Click Start menu and click [Windows Explorer].

   * The procedure in the case of the classic start menu

     Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "DXSETUP.EXE" in the following directory.

   <DVD-ROM Drive Letter>:\WINNT\DOTNET\NS4\PROSET\2KXPWS03

   The [Intel® PROSet - InstallShield Wizard] dialog starts.
4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Choose "Complete" and click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finish].
9. Restart the system.

Network Driver

Specify the details of network driver.

One standard network driver that is mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

[When PROSet is not installed]

1. The [Local Area Connection Properties] dialog box appears.

* The procedure in the case of the standard start menu

1. Click Start menu, Click [Control Panel], Click [Network Connections], and Click [Local Area Connection].

* The procedure in the case of the classic start menu

1. Click Start menu, Click [Settings] and Click [Network Connections].

   The [Network Connections] dialog box appears.

2. Right-click [Local Area Connection] and click [Properties] from pop-up menu.

2. Click [Configure].

The property dialog box for network adapter appears.

3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.

4. Click [OK] on the property dialog box for network adapter.

[When PROSet is installed]

1. The [Intel(R) PROSet] dialog box appears.

* The procedure in the case of the standard start menu

Click Start menu, point to [Control Panel], [administrative tools], and click [Computer Management] and then double click the [(Network Adapter Name)] in the Network Adapter list.

* The procedure in the case of the classic start menu

1. Click Start menu, point to [Settings] and click [Control Panel].
2. Click [administrative tools].
3. Click [Computer Management] and double click the [(Network Adapter Name)] in the Network Adapter list.

2. Click the [Link] and specify the [Speed and Duplex] value the same as the value specified for HUB.

3. Click [Apply] and click [OK].

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

> **NOTE:** We recommend you to add [Network Monitor] at [AddingServices]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setup for Trouble Process" later in this document.

Re-install the Network Driver

The network driver will be installed automatically.

See "Optional Network Board Driver" in Chapter 5 for re-install the Optional Network Board Driver.

Graphics Accelerator Driver

The graphics accelerator driver will be automatically installed by Express Setup or system update.

> **NOTE:** Please refer to the following < reinstalling > when the graphics accelerator driver is deleted, and reinstalled after OS is installed.

<About the driver of graphics accelerator (N8105-45)>

When graphics accelerator (N8105-45) board is installed or it separates, the deletion of the graphics accelerator driver which has already been installed is necessary.

The procedure is as follows.

1. Click Start menu, point to [Setting] and click [Control Panel].
2. Click [Add/Remove Programs].
3. Select the graphics accelerator driver from the program list and click "Change/Remove".

   To delete a standard graphics accelerator driver, select:
   [Matrox Graphics Software (remove only)]

   To delete a graphics accelerator (N8105-45) driver, select:
   [ATI Display Driver]

   > **NOTE:** Please choose the graphics accelerator driver which has already been installed.

4. Follow the message to continue the uninstallation and restart the system.
5. Installing graphics accelerator driver.

   Manually installation:
   Make installation in the way of "Reinstallation of graphics accelerator driver"

   Automatic installation:
   You should execute the system update again referring to "Updating the system".

   End of installation.

<Reinstallation of graphics accelerator driver>

1. Insert the NEC EXPRESSBUILDER CD-ROM into the DVD-ROM drive.
2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].
3. Run "SETUP.EXE" which is in the following directory.

   To install a standard graphics accelerator driver:
   <DVD-ROM Drive Letter>:\WINNT\DOTNET\VIDEO\MATROX\SETUP.EXE.

   To install a graphics accelerator (N8105-45) driver:
   <DVD-ROM Drive Letter>:\WINNT\DOTNET\VIDEO\ES1000\SETUP.EXE.

   NOTE: Please choose one of above to be installed.

4. Follow the message to continue the installation.

   If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.

5. Remove the NEC EXPRESSBUILDER CD-ROM from the DVD-ROM drive, and restart the system.

   End of installation.

Installing SCSI Controller Driver (N8103-75/95/N8190-126)

If you utilize SCSI controller driver (N8103-75/95/N8190-126), update your system with NEC EXPRESSBUILDER CD-ROM attached to your system.

The SCSI controller driver will be installed automatically.

Installing Disk Array Controller Driver (N8103-80F/81F)

To additionally install the N8103-80F/81F in a system containing Windows Server 2003, connect the controller and take the following steps to install the driver:

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools] → [Computer Management].
2. Double-click [LSI Logic Megaraid SCSI 320-1/2] which Device Manager lists.
3. Click the [Driver] tab and click [Update Driver...].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select the "Search for the best driver in these locations." and check the "Search removable media [floppy, CD-ROM...]" check box.
6. Insert "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, and click [Next].
7. Copying of the driver is completed, and the [Completing the Hardware Update Wizard] dialog box below appears. Click [Finish].

Notes of N8103-75

After installing OS, the driver may not be installed depending on the method of installing OS occasionally.

In that case, please install the driver by the following procedures.

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools]→ [Computer Management].
2. Double-click the SCSI Controller driver which Device Manager lists as Other device.
3. Click [Update Driver].
4. When the "Update Device Driver Wizard" appears, select "Install from a list or specific location [Advanced]" and click [Next].
5. Select "Don't search. I will choose the driver to install" and click [Next].
6. Click [Have Disk..].
7. Insert "Windows Server 2003 OEM-DISK for NEC EXPRESSBUILDER" into the floppy disk drive, enter "a:\" into "copy manufacturer's file from:" and click [OK].
8. Specify the following driver and click [Next].
   - [INITIO INI-A10XU2W PCI SCSI Controller] (When N8103-65F board is installed.)
   - [Adaptec SCSI Card 29320ALP -Ultra320 SCSI] (When N8103-75 board is installed.)

   The installation of the driver is completed.

   Restart the system according to the message appeared on the screen.

About Windows Activation

Windows Server 2003 must be activated before you can use Windows Server 2003.

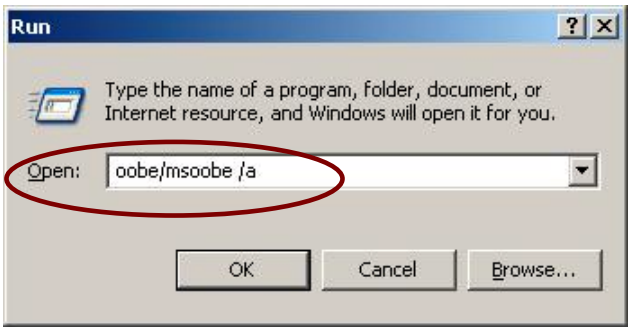
Windows activation process is as follows.

> **NOTE:** When you use Windows Server 2003 R2, activation process is not needed.

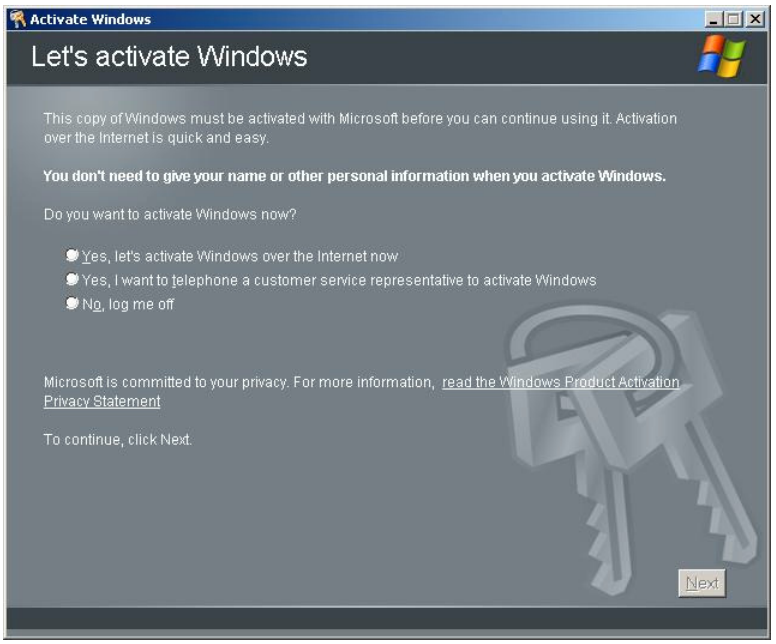
1. Click [Run] on [Start] menu.

   Type as follows in the [Open:] box, and click [OK].

   oobe/msoobe /a

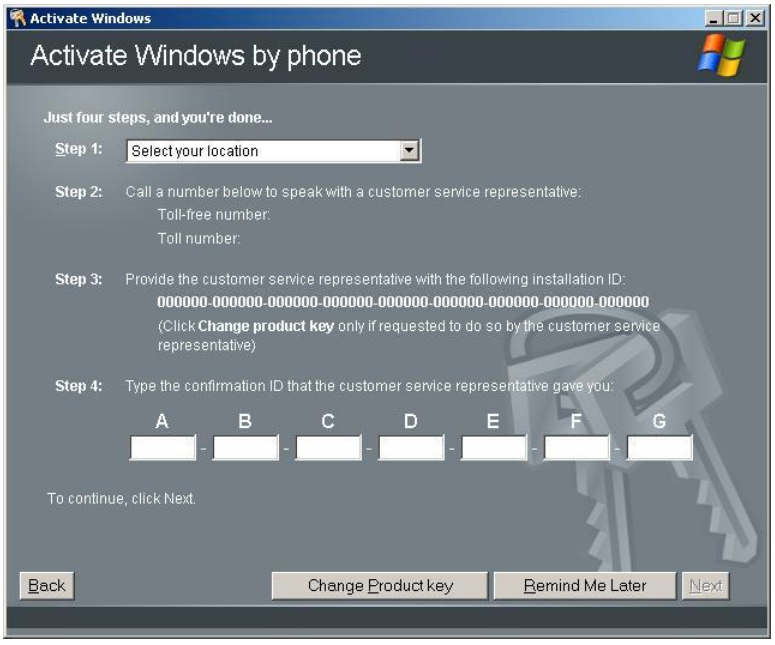


2. When the screen as follows is displayed, click [Next].


Activate Windows
Let's activate Windows
This copy of Windows must be activated with Microsoft before you can continue using it. Activation over the Internet is quick and easy.
You don't need to give your name or other personal information when you activate Windows.
Do you want to activate Windows now?
Yes, let's activate Windows over the Internet now
Yes, I want to telephone a customer service representative to activate Windows
No, log me off
Microsoft is committed to your privacy. For more information, read the Windows Product Activation Privacy Statement
To continue, click Next.
Next

The following screen is displayed.

3. Process "Windows activation" according to the following message.



Available Switch Options for Windows Server 2003 Boot.ini file

Many different switches will be available if you edit Boot.ini file.

For the available switch options, refer to the following information:

- Microsoft Knowledge Base - Article ID: 833721

  "Available switch options for the Windows XP and the Windows Server 2003 Boot.ini files"

If your system has a memory capacity in excess of 4GB in its installing, adding /PAE switch in Boot.ini file will enable the system to be installed with over 4GB of memory.

However, the Microsoft operating system products which support /PAE switch option are limited.

Refer to the following article in Microsoft Knowledge Base to check the supported products.

- Microsoft Knowledge Base - Article ID: 291988

  "A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

Below is the example on how to add /PAE switch to Boot.ini file.

1. Click [Start], point to [Settings], and then click [Control Panel].
2. In [Control Panel], double-click [System].
3. Click the [Advanced] tab, and then click [Settings] under [Setup and Recovery].
4. Under [System Setup], click [Edit] to open [Boot.ini].
5. Add "/PAE" to [Operating Systems] section in [Boot.ini] file, and then save it.

   <Example of Boot.ini file>

   ```
   [boot loader]
   timeout=30
   default=multi(0)disk(0)rdisk(0)partition(2)\WINDOWS
   [operating systems]
   multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003" /fastdetect
   multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003, PAE" /fastdetect
   /PAE
   C:\CMDCONS\BOOTSECT.DAT="Microsoft Windows Recovery Console" /cmdcons
   ```

   This is the end of editing Boot.ini file.

NOTE: If you choose one of the items in the "Default operating system" drop-down list box in [Setup and Recovery] group box, you can make your system start automatically from the switch you specified.

SETTING FOR COLLECTING MEMORY DUMP (DEBUG INFORMATION)

Set for collecting memory dump using the procedure described in Chapter 5.

Appendix F

Product Configuration Record Table

Use this table for information about setup and system environment change.

Hardware

Main Unit						
	Model name		Serial No.		Date Installed	
CPU						
#1	Clock		Serial No.		Date Installed	
#2	Clock		Serial No.		Date Installed	
Hard Disk Drive						
#1	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#2	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#3	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#4	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#5	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#6	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#7	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#8	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
Monitor						
	Type		Model name		Serial No.	
					Date Installed	
Memory						
#1	Size		Serial No.		Date Installed	
#2	Size		Serial No.		Date Installed	
#3	Size		Serial No.		Date Installed	
#4	Size		Serial No.		Date Installed	
#5	Size		Serial No.		Date Installed	
#6	Size		Serial No.		Date Installed	

#7	Size		Serial No.		Date Installed	
#8	Size		Serial No.		Date Installed	
#9	Size		Serial No.		Date Installed	
#10	Size		Serial No.		Date Installed	
#11	Size		Serial No.		Date Installed	
#12	Size		Serial No.		Date Installed	
5.25-inch Device						
Slot 1	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
Slot 2	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
Slot 3 (standard DVD-ROM drive)	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
3.5-inch Device						
Slot 1	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
Slot 2	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
Slot 3	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
Slot 4	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
PCI Slot #1						
	Model name				Serial No.	
					Date Installed	
PCI Slot #2						
	Model name				Serial No.	
					Date Installed	
PCI e Slot #3						
	Model name				Serial No.	
					Date Installed	
PCI e Slot #4						
	Model name				Serial No.	
					Date Installed	
PCI e Slot #5						
	Model name				Serial No.	
					Date Installed	
Additional Disk Cabinet						
	Model name				Serial No.	
					Date Installed	
External Peripheral Device 1						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 2						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 3						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 4						
	Model name				Serial No.	
	Manufacturer				Date Installed	

Software

Firmware version				
OS Application of RUR media	 ☐ Apply	Name: Name:		Version: Version:
File system	☐ FAT ☐ Others (	☐ HPFS	☐ NTFS)	
Bundled software installed				
Licensed software installed				
Application running when a failure occurred				
Remarks				

(This page is intentionally left blank.)